PULP & PAPER

JUNE 1959

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New Bagasse Process
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Chip Boom in Montana
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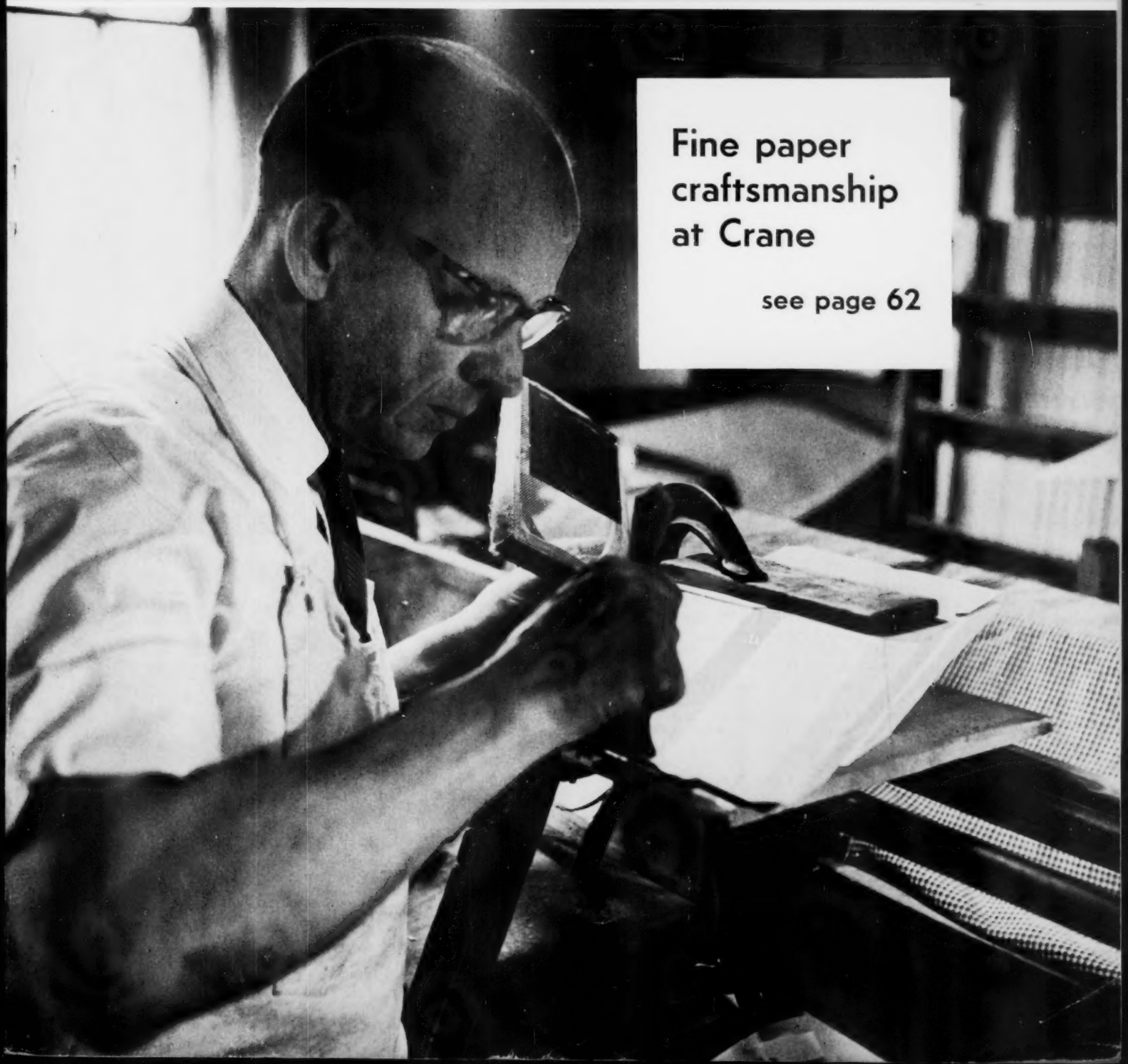

Fine paper craftsmanship at Crane

see page 62

. . . means more to papermakers than any steel developed in two decades

Its unique properties provide: absolute resistance to corrosion from chemicals normally encountered in refining equipment — protection of the cutting edges against wear and abrasion — toughness to withstand deformation without fracture — and the capacity to resist severe shock.

The need for a metal with this combination of mechanical properties has long been felt. Before the first shipments of Bolton Special Stainless were made in 1948, the choice was between wear resistance or corrosion resistance. Now, The Papermaker gets both, in addition to all other necessary properties.

Bolton Special Stainless is a chrome-nickel alloy having a chrome and nickel content approximating that in 300 series Stainless. It has made possible a form of heat-treating never before used commercially on steel for refining equipment. Known as precipitation hardening, this in-plant custom heat-treating gives the finished steel the unique character of being entirely free of stresses. This Bolton heat treatment makes it practicable to control the relationship of mechanical properties of the metal to meet the specialized requirements of paper mill refining operations.

Brinell Hardness	Tensile Strength (Average Minimum)	% Elongation (2")	% Reduction of Area
321	180,200	16.4	74.2
363	199,300	14.5	41.9
415	211,700	14.0	32.1

Various heat treatments for differing mill applications

It has taken years to prove this metal under all operating conditions. Now we have standardized our inventories on Bolton Special Stainless. We are proud to offer this premium quality stainless at no additional cost. Bolton Special Stainless is on hand in quantity to make prompt shipments to the growing number of papermakers *who have compared* — in all patterns, in all makes of Jordans. Don't wait. Try it now. *Call or write John W. Bolton & Sons, Inc., Lawrence, Massachusetts.*

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The "Fibre-Flash" drying process for use with all types of pulp consists of dewatering the pulp, fiberizing the concentrated pulp material thoroughly to insure uniform drying, evaporation of the fiber-bound water to the required degree of dryness and baling or bulking the material into convenient form for storage or shipment.

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Reduced labor costs.

Simplicity of equipment with moving parts at a minimum.

Elimination of over-heating or case-hardening effect.

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Paper Machinery Builders Since 1837

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Are *you* one of the ones that are cashing in on the Centriscreen's extraordinary and demonstrated ability to *remove dirt and shives, improve formation, increase machine output, eliminate lumps* and *reduce breaks* — all at a great reduction in screening cost per ton? If not, do not delay. Let us show you what the Centriscreen can do in *your* mill, ahead of *your* machines, on *your* stocks.

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BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

PULP & PAPER

Reader's Guided Tour

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NUMBER 6

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Current Situation in Europe 59

Here is a probing report direct from the heart of Europe written by Editor Al Wilson, now on a three-month trip visiting European mills and industry leaders. He succinctly analyzes the potentials for pulp and paper in Europe.

Fine Papermaking at Crane & Co. 62

For many, the epitome of fine papers is Crane & Co. This story shows how this 158-year-old firm couples fine papermaking tradition with modern-day quality control techniques.

COVER PICTURE

Applying gold leaf to stationery is typical of the many highly skilled crafts used by Crane in producing its fine quality papers. In the operation shown, only the purest gold is used, in sheets so thin that 300,000 barely make a one-inch pile.

Six Routes to Semi-Chemical Recovery 66

A tough problem facing semi-chemical pulp mills today is which recovery process to use. Here is an appraisal of six processes by three experts in the field.

Break-Through in Bagasse Pulping 76

From Scott Paper Co's San Cristobal mill in Mexico comes this significant report on the use of bagasse pulp in the production of high quality Scott products. Details on their new process are by the inventor, Dr. Sandro Cusi.

Chips Feed Montana Mill 119

One lumber mill in Montana reaps up to 7% of its gross income from chips it supplies to local pulp mill, makes possible use of 75% of its former waste. Ten other sawmills are in the chip business too.

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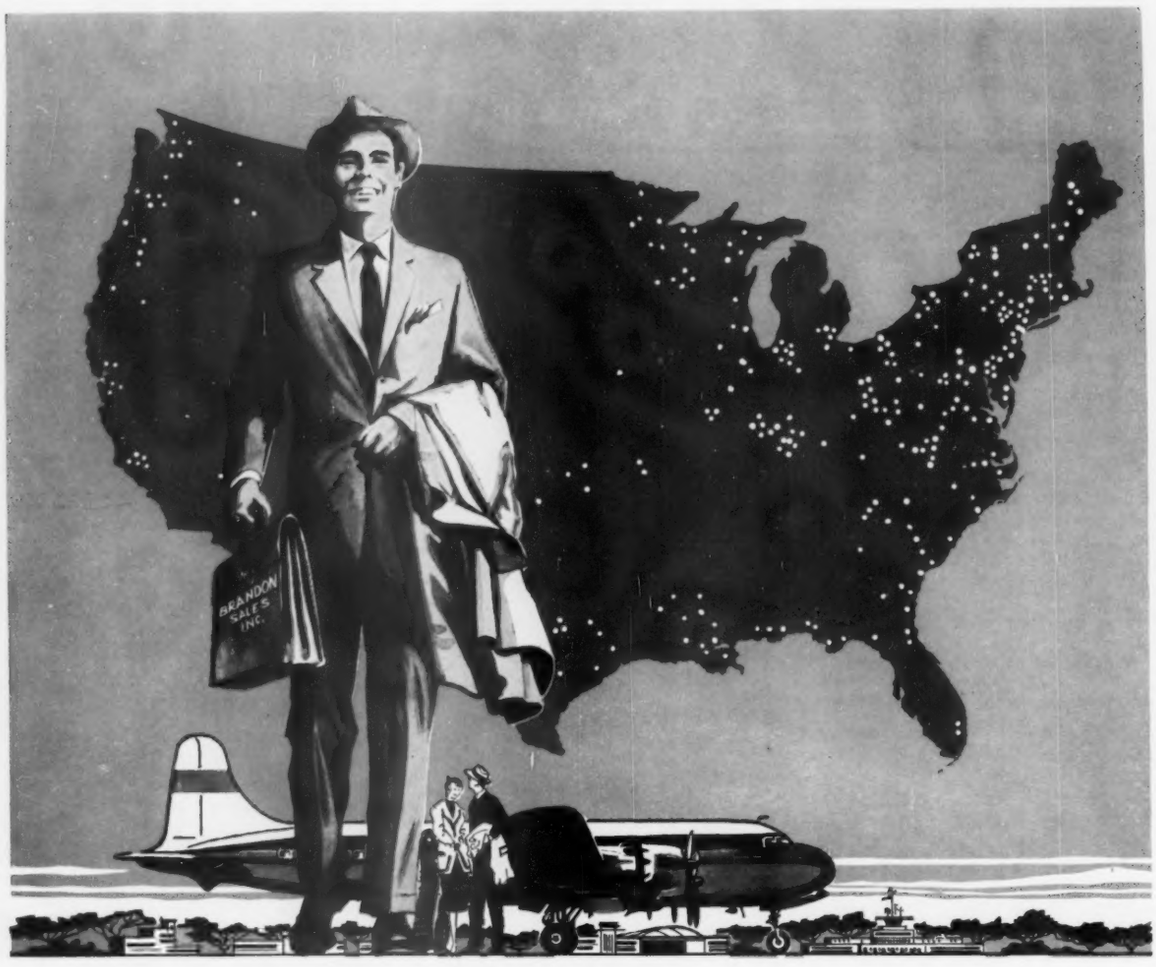

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MILLER FREEMAN PUBLICATIONS

Need U.S. Market Now

New York

Editor: Re your article on the European Common Market (PULP & PAPER, May 1959), this is probably one of the liveliest subjects of discussion in all American industry today.

Faced with mounting overcapacity, the pulp and paper industry can market this overcapacity only overseas. This is the salvation of our present problems: exports.

But the Common Market will take a few, if not many years, to get on the ball and I'm not all sure that we in the U.S. can wait that long. What we have to do is develop a greater market right here while we're biding our time.

R. M. YEATES

Charge for Recreation Use

Jacksonville, Fla.

Editor: I wonder how many companies that permit the public to use their lands realize they have a potential goldmine on their hands. I've just come back from a visit up North, and in North Carolina I saw something that really amazed me.

One large utility company has developed its lands and water sites to a remarkable degree. I saw pleasure craft of every type and size on some of the lakes owned by this utility. There were many areas that had summer camps set up in what amounted to almost a community development. To my mind, this is smart merchandising and a great public relations gesture.

If some pulp and paper companies were to charge for their recreational use of their lands, it is possible they could harvest some revenue from this as well as from logging.

I would like to know if any of your readers are doing this.

ALBERT ARNST

Yes, The Editor Will Report

New York

Editor: I noticed that in your last issue that Editor Al Wilson is on a three-month trip to Europe. I've known Al for a good many years and respect his reporting ability. Is there any chance of seeing any of his reports from Europe? Will you publish any of these reports? I bet they would be a great help to some of us in the industry who are trying to understand what the industry's prospects are overseas.

HAROLD HOLDEN,
President, Gilman
Paper Co.

(Editor's Note: Thanks for the compliment to Editor Al Wilson. He has been sending us reports almost daily and they make most fascinating reading. Yes, Al's reports will be published. For a first look at Europe over-the-shoulders of Mr. Wilson, see the lead-off article in this issue, The Current Situation in Europe).

MEETING DATES CALENDAR

June 2-4
APPMSA National Meeting
Shamrock-Hilton Hotel, Houston, Texas

June 12
Miami Valley Div., APPMSA
Piqua Country Club, Piqua, O.

June 17-20
CPPA Summer Meeting
Manor Richelieu Hotel, Murray Bay, P.Q.

June 15-26
Summer Course: "Paper its Properties and Uses" (sponsored by the Boston Paper Trade Assn. and the New England Paper Merchants Assn.)
Lowell Technological Institute, Dept. of Paper Engineering.

June 28-July 3
Forest Products Research Society, 13th National Meeting—"Research for Profit"
St. Francis Hotel, San Francisco, Cal.

August 17-21
10th TAPPI Testing Conference
Multnomah Hotel, Portland, Ore.

September 10-12
Wood Industries Conference (sponsored by the American Society of Mechanical Engineers, the Forest Products Research Society and the American Institute of Chemical Engineers)
Multnomah Hotel, Portland, Ore.

September 9-11
Fundamental Research-Wet Strength Conference
Institute of Paper Chemistry, Appleton, Wis.

September 15-17
9th TAPPI Corrugated Containers Conference
Jung Hotel, New Orleans, La.

September 21-23
14th TAPPI Paper-Plastics Conference
Edgewater Beach Hotel, Chicago, Ill.

October 12-15
14th TAPPI Engineering Conference
Penn-Sheraton Hotel, Pittsburgh, Pa.

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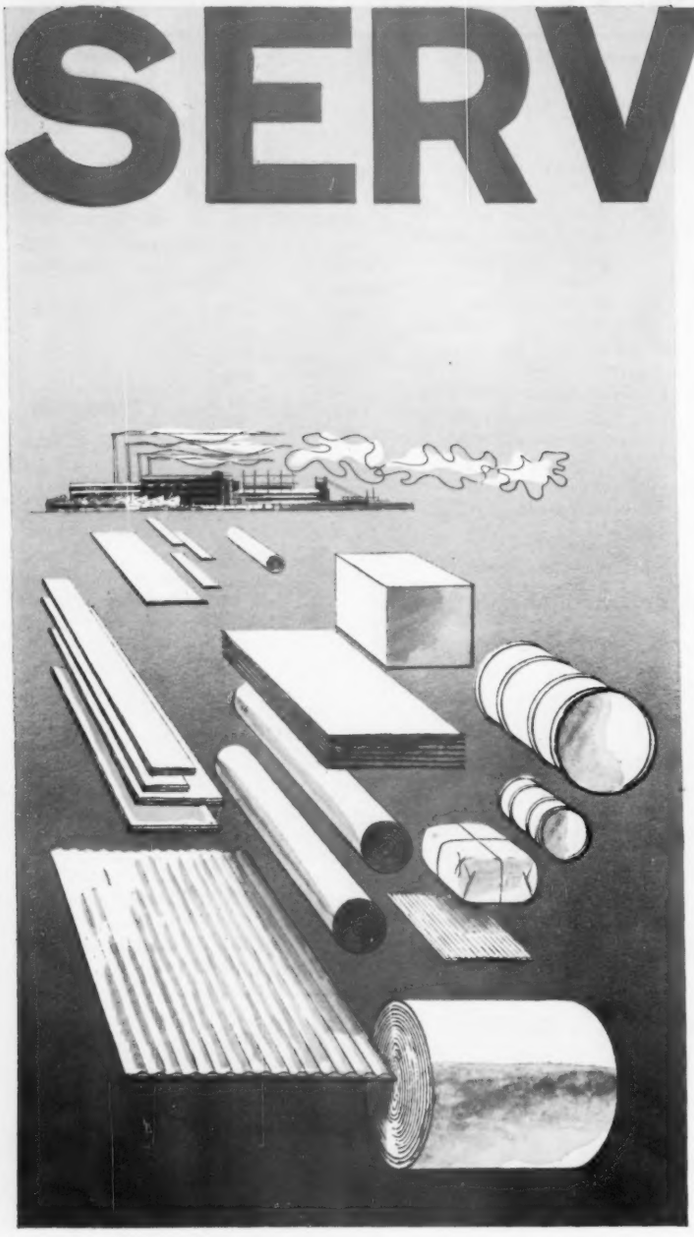

...when you buy pulp, paper, paperboard or newsprint from Central National Corporation—a member of The Gottesman Organization. Whatever your requirements, you know you can rely on Central National's excellent service. It reflects over 70 years' experience in satisfying the pulp and paper needs of mills throughout the world. *Contact us today!*

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MONTHLY REPORT – WORLD NEWS

THE "WORLD'S MOST MODERN" HIGH-GRADE SEMI-CHEMICAL PULP MILL . . . has started full-scale operation at Cremona, Italy. Soc. Uti-le is in continuous production turning out 30 daily tons of NSSC pulp. Raw material is low-cost poplar veneer waste and poplar branches. The plant is said to be an "interesting combination of the latest in U. S. and European equipment." Basic design has resulted from pilot plant and research work undertaken at the Fiber Products Laboratory, Springfield, Ohio, U. S. A. Pulping equipment was supplied by Bauer Bros. Co. through United States Machinery Co. The latter firm was in charge of engineering and supervised installation and start-up in cooperation with European associates.

NEW MACHINE FOR CANADA . . . is announced by KVP Co. Ltd. at Espanola, Ont. The unit will have an annual capacity of 15,000 tons of bleached kraft specialty papers, will produce both machine-glazed and machine-finished. Estimated cost—including stock preparation equipment—is $2,-500,000. Completion is set for next year. Major contract has been awarded Black-Clawson (Canada) Ltd.

MORE HOME-PRODUCED PAPER IN PHILIPPINES. . . . where Globe Paper Mills (a div. of Keng Hua Paper Products) has started a new machine in a suburb of Manila. The Escher Wyss (W. Germany) unit has a speed of 500 fpm with a trim of 104 in. in the production of high-grade printing and wrapping papers.

MULTIMILLION-DOLLAR EXPANSION . . . at Antioch, Cal., U. S. A., where Fibreboard Paper Products Corp. will construct a kraft pulp and paperboard mill at its San Joaquin plant. Adding 72,000 tons to present annual capacity will be a third paperboard machine, a complete pulp processing system and additional raw material handling equipment.

NEW MILL IN WEST AFRICA . . . is a distinct possibility. Ghana Industrial Development Corp. is considering construction of a plant to utilize local raw materials.

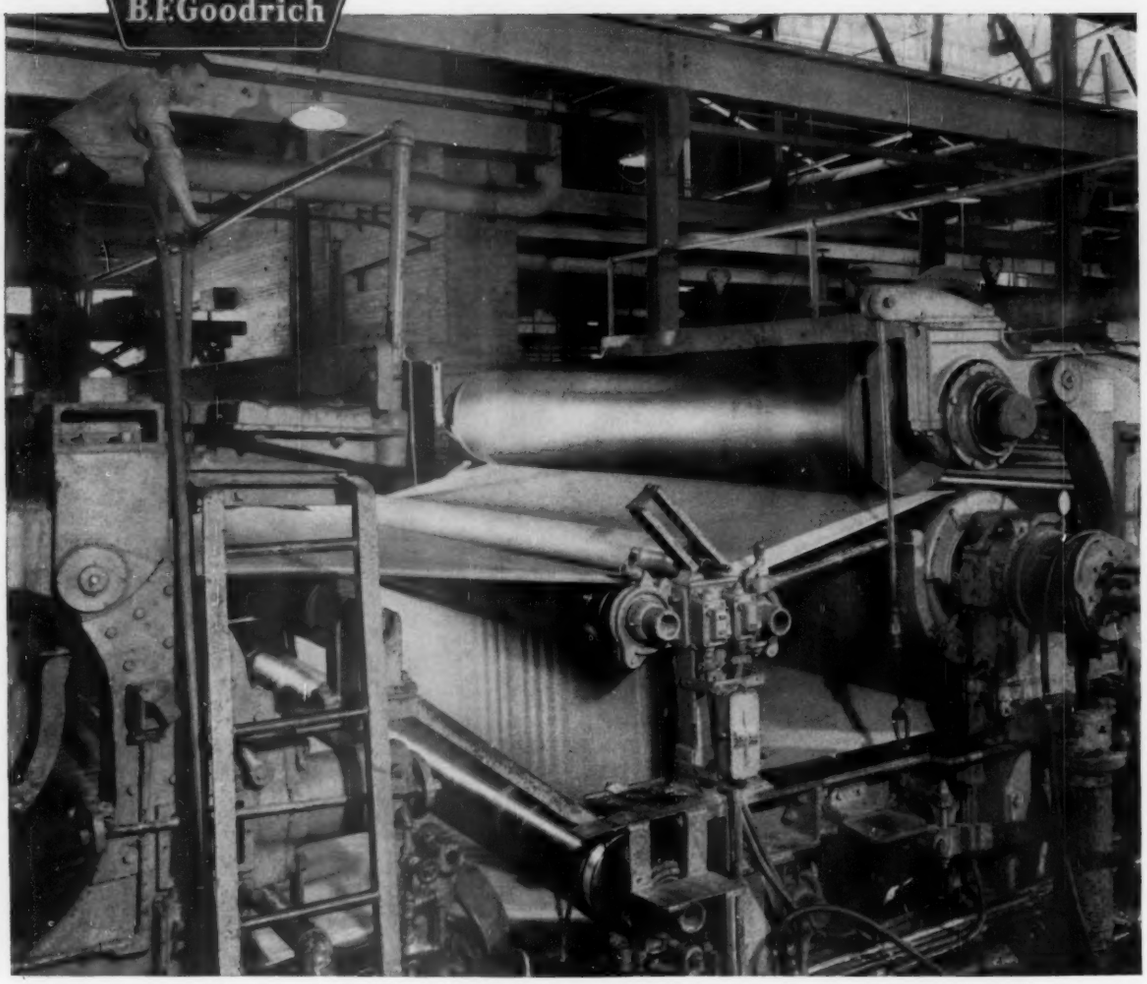
A NORTHERN MANITOBA (CANADA) PULP AND PAPER MILL . . . is expected to be one of the early sequels to the $25,000,000 International Nickel Co. refinery development at Thompson. Power would be supplied by a hydro-electric project now under construction, and raw material would be from easily-accessible woodlands along the Nelson river, which empties into Hudson Bay.

SWEDISH PULP SALES OVERSEAS "REFRESHED" . . . following the new March 1959 price agreements. Especially is this true of British trade; while business with the Netherlands, Belgium and Denmark has not yet resumed the pre-March level, indications are that "normalcy" will be forthcoming—and soon.

SIX-YEAR EXPANSION PROGRAM SET FOR SWEDEN . . . where Stora Kopparbergs Bergslags AB mills at Skutskar will be enlarged and modernized at a cost of Kr. 85,000,000 (about $16,500,000). The plans are to increase production of various pulps from 110,000 tons to 220,000 tons annually. The project foreshadows an expansion in production of bleached sulfate from 70,-000 to 80,000 tons per year; of bleached sulfite from 42,000 to 75,000. Additionally, 65,000 tons of sulfate pulp will be produced from birch.

MAJOR UNITED STATES MACHINERY BUILDER TO EXPAND. . . . Beloit Iron Works will construct a completely integrated welding-fabricating plant near Rockton, Ill. The 68,000-sq. ft. facility heralds the first step in the Wisconsin firm's expansion into northern Illinois.

CENTRAL AMERICA'S FIRST PAPERMAKING FACILITIES . . . are under construction in Guatemala, where local interests and the Gottesman Organization of New York, U. S. A., have joined forces in a privately-financed development project. The recently formed company—Industria Papelera Centroamericana SA—will produce various grades of bleached and unbleached papers, while at the same time increasing Guatemala's paperboard output.



Better paper formation, less shadow marking with this top press roll

YOU can get smoother, more uniform paper formation, and reduce shadow marking, by equipping your paper machines with B.F.Goodrich top press rolls. That's because the covers of these rolls are made of a special *soft* rubber compound, tough enough to stand years of use, yet soft so the roll presses perfectly without causing any crush marks to form in the tender stock.

This resilient rubber roll also gives better water removal at high speeds, and much longer felt life than was obtained with the bonehard type of roll previously used in top press service.

Another advantage of this *soft* rubber is that it does not pick fibers from the sheet. The B.F.Goodrich top press roll can be run directly on the sheet with practically every kind of paper stock except ground wood. On the machine shown above, a B.F.Goodrich roll has been in service seven years now, helping to turn out wrapping paper, bag paper, bleached and unbleached specialties.

B.F.Goodrich makes top press rolls in a wide range of densities to fit the job—from 20 plastometer to as soft as you might want them. Let a B.F. Goodrich man show you how longer lasting, better performing B.F.Goodrich paper mill rolls can improve the quality of your paper and save you money. *B.F.Goodrich Industrial Products Company, Dept.* M-604 *Akron 18, Ohio.*

B.F.Goodrich *paper mill rolls*

MONTHLY REPORT – WORLD NEWS

1959 NEWSPRINT IMPROVEMENT . . . is forecast by D. W. Ambridge, president of Abitibi Power & Paper Co. Ltd. of Toronto, Canada. It is reasonable to expect, he said, an improvement over 1958. For instance, U. S. consumption in the first two months of 1959 was up nearly 4% from the year before.

WOOD-FREE AND MAGAZINE PRINTING PAPERS . . . will be produced at Burnie, Tasmania, as the result of a £4,000,000 ($11,280,000) expansion program. Included will be a high-speed paper machine and auxiliary equipment.

ITALY'S LARGEST PAPER MILL . . . is nearing completion near Trieste. A paper machine manufactured in Finland will produce newsprint and "paper for illustrated periodicals." The unit will produce about 25% of Italy's newsprint needs. Pulpwood is received from Sweden, Finland and Austria.

U. S. A. FIRM ACQUIRES FRENCH HOLDINGS. . . . French paper industry officials confirm that Kimberly-Clark Corp., Neenah, Wis., has acquired an interest in a French mill near Quimper on the Britanny coast.

SUBSTANTIAL PRODUCTION GAINS . . . were registered by German industry during February. The index climbed from 218 in January to an estimated 225 (1936-100), an increase of 7%.

EAST GERMANY PLANS INCREASE . . . in per capita paperboard output from 38 kilograms (87 lb.) in 1958 to 62 kilograms (136 lb.) by 1965.

NORTH AFRICAN CHANGE. . . . Construction is underway in Tunis, North Africa, of a mill that will produce pulp from esparto grass. The pulp is to be shipped to European ports (mainly Scottish) for the production of high-quality paper. The grass was formerly exported and made into pulp on the Continent. Building the Tunisian mill is Société Nationale Tunisienne du Cellulose. Construction is under the direction of Parsons & Whittemore/Lyddon Organization.

RUSSIA IS SWIFTLY EXPANDING . . . its pulp sales in the U. S., according to Rice Barton Corp. U. S. S. R. sent only 214 tons to these shores in 1958. "The 1959 tonnage will increase from 20 to 50 times the 1958 amount."

UP 10% WAS U. S. PAPER AND BOARD PRODUCTION . . . in February, according to the Dept. of Commerce. The total was 2,612,502 tons as compared to 2,370,466 tons in the same month last year. Wood pulp production in February was 1,842,499 tons, up from the 1,680,872 tons of a year ago.

MORE MARKET PULP MADE IN FRANCE . . . With two new market pulp mills in production and increased supplies from established mills, France has considerably enlarged its market woodpulp production. Early in 1959, the new Cellulose d'Aquitaine mill came into production, with an expected 30,000 to 35,000 tons a year of bleached hardwood pulp for paper and dissolving use. Another new market pulp mill, Cellulose du Rhone, is offering approximately 45,000 tons of bleached kraft pulp and also 15,000 tons of bleached esparto pulp. And all of the five Cellulose de Landes mills, in the southwest, although integrated to make paper, also sell surplus pulp. One of these mills makes bleached pine dissolving pulp. About 200,000 tons of market sulfite pulp is made by mills in the north. The Calais mill makes unbleached sulfite, and at Strasbourg both unbleached and bleached sulfite pulp is made for sale.

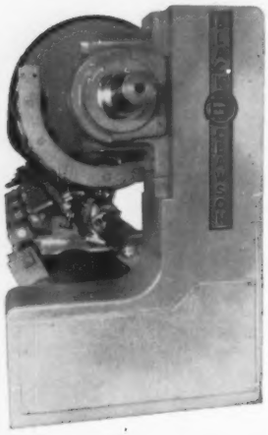
IN RUMANIA: MORE CREPE. . . . A mill in Zarnesti has put into operation a crepe paper plant. Monthly output averages 500 metric tons (550 short tons). The mill will also extend production to kraft and fine paper and parchment.

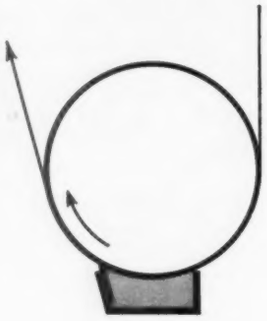
5.5% INCREASE SHOWN IN FOLDING CARTON SHIPMENTS IN MARCH . . . as compared to a year ago. According to the Folding Paper Box Assn. of America, dollar volume surged to $79,500,000; industry output totaled 203,830 tons, up 6.6%.

BLACK-CLAWSON FLEXIBLADE*

A UNIQUE HIGH SOLIDS BLADE COATER

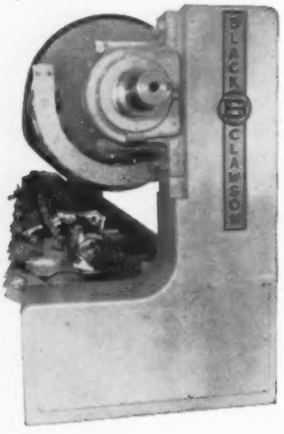
in Operation on Paper and Board Machines





Coater up
and coating

- Enclosed Coating Chamber
- Coat Weight can be varied and controlled while machine is running
- Uniform Coating



Coater down
in cleaning position

- Coating Does Not Spill
- Blade Change in Less than a Minute
- Accessible for Rapid Clean-up

*Trademark—Patented and other Patents Pending

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MONTHLY REPORT – WORLD NEWS

POWELL RIVER CO. LTD.'S NEW MACHINE . . . will be built by Dominion Engineering Co. Ltd. It will be installed at a new mill on Annacis Island, B. C., Canada, and will produce a variety of fine papers with a wide range of basis weights. Maximum mechanical speed will be 1200 fpm. The wire will be 120 in. wide and approximately 95 ft. in length; the suction couch 30 in. in dia. and equipped with a 30-in. dia. press roll. The press section will consist of a first straight-through suction press, a second reverse suction press. Ahead of the dryer section will be a pair of smoothing rolls. Comprising the main dryer section will be twenty-three 60-in. dryers and four 60-in. felt dryers; following the size press, eight 60-in. dryers and two 60-in. felt dryers. Completing the machine will be a calender stack with hydraulic loading, a constant-tension reel and a two-drum winder.

EXPANSION IN MAINE . . . where Fraser Paper Ltd. has ordered a 234-in. Pusey & Jones Fourdrinier for installation at its Madawaska mill. Set for start-up early in 1960, the machine is to have a 110-ft. wire and will operate at 2,000 fpm. Production: 190 tons bond per day.

ENOUGH WAXED PAPER . . . to wrap more than 4,000,000 sandwiches was distributed in a recent Sunday edition of the Chicago Tribune. Used in the ad campaign for Badger Paper Mills Inc. of Peshtigo, Wis., was more than 400 miles of waxed paper carrying a three-color message.

GOLDEN MILESTONE IN AMERICAN FORESTRY . . . will occur this summer, when the American Tree Farm System will certify its 50,000,000th acre. Thus, 18 years after its beginning, "the movement has become probably the greatest voluntary forest management program the world has ever known."

CONTINUED IMPROVEMENT IN USE OF RAW MATERIALS . . . is reported by the Northwest Pulp & Paper Assn. During 1958 the percentage of chips, mill leftovers and farmer wood that went into pulp production increased nearly 8% to a total of more than 59% of all raw materials.

SEN. PROXMIRE'S NEWSPRINT EFFORTS REVIVED. . . . According to a report to PULP & PAPER, the U. S. Forest Service is preparing basic information for the Wisconsin (U. S. A.) lawmaker, and the guess is that softwoods (instead of hardwoods) will be recommended for the Wisconsin newsprint mill proposed by the senator. The industry can look for many new reports on the question in the near future. Discussion will be rampant.

HOPSCOTCHING THE NORTH AMERICAN INDUSTRY. . . . The pulp and paper industry's first commercial scale installation of a new soda ash recovery process is in operation at the Wisconsin Rapids div. of Consolidated Water Power & Paper Co. . . . Celgar Ltd's $50,000,000 bleached sulfate mill now under construction at Castlegar, B. C., will be the first in British Columbia to install a Kamyr continuous digester system. . . . Union Bag-Camp Paper Corp. has acquired the majority of the outstanding stock of Eastern Box Co., Baltimore, Md. . . . New No. 4 paper machine at the Halifax Paper Co. div of Albemarle Paper Mfg. Co. Inc. was scheduled for start-up early this month. The 246-in. Beloit Iron Works unit is at the Roanoke Rapids, N. C. plant. . . . St. Regis Paper Co. has acquired all the oustanding capital stock of Northwest Door Co., Tacoma, Wash., in exchange for St. Regis shares. Northwest Door controls 4,665 acres of timberlands. . . . Brown Co. is constructing at Birmingham, Ala., its newest Bermico plant. The facility will be similar to the Bermico operation in Corvallis, Ore., and will produce fiber sewer pipe and conduit. . . . Container Corp. of America has purchased Arizona Container Corp., Phoenix, Ariz. . . . Daniel Construction Co. of Greenville, S. C., has been awarded the contract for construction of Continental Can Co. Inc.'s multimillion-dollar bleached board and paper mill near Augusta, Ga. In another recent move, Continental Can has purchased Fort Wayne Corrugated Paper Co. . . . American Forest Products Corp. (with 50-ton paperboard mill at Newark, Cal.) is building a $3,000,000 corrugating and carton-forming plant at Santa Fe Springs (near Los Angeles).

PULP PAPER

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HEMISPHERE PAPER CO., S.A.
In New England—CARTER RICE STORRS & BEMENT

WORLD PULP & PAPER Technical News

Pulp Water Affinity—Russia

VOITESKHOVSKII, R. V. Bumazh. Prom. 33, no. 6: 2-5 (June, 1958). [In Russian] Abstr. Bull. I.P.C. 29: 869.

The amounts of bound water were determined in kraft and sulfite pulps before and after beating, in dissolving pulp before and after mercerization, and in paper, using the interferometer or the refractometer. In this method, the amount of bound water is calculated by substracting the sum of the dry substance weight and free water weight from the total weight of the sample. To determine the amount of free water, the sample is mixed with a 17-18% solution of sucrose the volume of which is calculated so as to obtain a fiber: liquid ratio of 1.18. The concentration of the sucrose solution is measured with a saccharimeter, and the difference between the concentrations of the initial sucrose solution and the solution in equilibrium with the fiber sample is measured by means of an interferometer or a refractometer. The free water in the sample is then calculated from a formula. It was established that the amount of bound water varies during the different stages of the papermaking process. The hydrophilic nature of cellulose increases during beating and mercerization and decreases during paper web drying. The increase during mercerization is irreversible. The mechanism by which water is bound by cellulose is discussed briefly.

Smoothness of Calendered Papers

Brecht, Walter, and Heyn, Diethelm. Wochbi, Papierfabrik, 86, no. 23/24, 1037-43 (Dec., 1958). [In German] Abstr. Bull. I.P.C. 29:1117.

The Bendtsen smoothness of three papers (bleached spruce and poplar sulfite pulps and an 80/20 mixture of spruce groundwood and unbleached spruce sulfite pulp) was measured as a function of their moisture content immediately after stationary glazing in an embossing calendar and 24 hr. later. The bleached poplar sulfite pulp showed the highest and the bleached spruce sulfite pulp the lowest smoothness. In general, paper smoothness increased with increasing moisture content up to about 15%, then decreased gradually (more rapidly for the groundwood-sulfite pulp mixture). After 24-hr. conditioning at 35, 65 and 90% R.H., the maximum became more pronounced, but its absolute height decreased; the smoothness *vs.* moisture curve shifted toward higher storage humidities. The smoothness decrease was greatest for the smoothest paper and depended not only on the absolute moisture content but also on the humidity gradient The data indicate that both increases and decreases in the moisture content of stored calendered papers reduce their smoothness by affecting the swelling and shrinkage of fibers in the paper surface. However, at equal moisture gradients, drying is less detrimental to smoothness than is wetting.

Presented with permission of The Institute of Paper Chemistry, under supervision of Curtis L. Brown, editor of IPC Bulletin. Photostats or translations of original reports available at reasonable cost by writing Eugene Bunker, librarian, Institute of Paper Chemistry, PO Box 498, Appleton, Wis., U.S.A.

Hardboard from Oakwood Chips After Tannin Extraction

PULIKOWSKI, ZDZISLAW. Przeglad Papierniczy 14, no. 4: 97-101 (April, 1958). [In Polish] Abstr. Bull. Inst. Paper Chem. 29: 722.

Laboratory tests and plant trials demonstrated that hardboards having bending and tensile strengths equal to those of pinewood hardboards can be obtained from extracted oakwood chips by a modified manufacturing process. After preliminary screening to remove the fraction smaller than 2 mm., the chips are fiberized at 160-170°C. under a steam pressure of 6-8 atm. and additionally beaten in a hollander to a freeness of 60 sec. (drainage time). The pulp is then fractionated to remove fines and slime (the "zero" fraction) and sized with 25% of bakelite adhesive (based on fiber weight). The bakelite-sized oakwood hardboards have a lower water absorbency than identically sized pinewood hardboards.

Detection of Casein

POURCHOT, E., and SEVE, R. Assoc. tech. ind. papetière, Bull. no. 2: 50-2 (1958). [In French] Abstr. Bull. Inst. Paper Chem. 29: 720-1.

A chromatographic method is described for the detection of casein in papers in the presence of gelatin, phosphates, and large quantities of alum. A sample of paper, cut into small pieces, is incubated for 24 hr. at 50°C. with a buffer solution containing trypsin. The hydrolyzate is evaporated to dryness to eliminate ammonia and acetic acid, redissolved in distilled water, filtered, and analyzed by ascending paper chromatography using a solvent mixture of *n*-butanol, acetic acid, and water in a 40:10:50 ratio. Casein is identified by the presence on the chromatograms of tryptophane, which gives a specific blue color with *p*-dimethylaminobenzaldehyde.

Water-Resistant Paperboard

MODRZEJEWSKI, KAZIMIERZ, and OLSZEWSKI, JAN. Przeglad Papierniczy 14, no. 5: 135-8 (May, 1958). [In Polish] Abstr. Bull. Inst. Paper Chem. 29:732-3.

Kraft board (sized and nonsized), presspahn, and gasket board were impregnated with linseed oil varnish containing red lead, with varnish and xylene solutions, and with water emulsions of "Rezophthal" resin (glyptal resin modified with linseed oil). The best hot-water resistance was obtained by impregnating nonsized kraft board (basis weight about 360 g./sq. m.) with a composition containing 35% Rezophthal resin, 60% varnish, and 5% red lead and drying at 140°C. for about 5 hr. The impregnated board had a hot-water absorbency of 19% and a tensile strength of 7.4 kg. in the dry state and 5.66 kg. when wet. The loss of impregnating agent during boiling was 0.7%. Radiator gaskets manufactured from the impregnated board were found fully satisfactory.

White Pigment for Coating

Kogan, G. M. Bumazh. Prom. 33, no. 10: 22-3 (Oct., 1958). [In Russian] Abstr. Bull. I.P.C. 29:1127.

A highly dispersed paper coating pigment having a whiteness of 80-85% contains 200 parts kaolin, 200 parts powdered technical chalk, 80 parts alum and a small amount of methylene blue. The pigment is prepared by reacting a finely dispersed suspension of chalk and kaolin with a 20% alum solution and drying the product to 50-60% dryness. For paper coating purposes, 19 kg. casein adhesive and 7 kg. glycerin (or 4 kg. wax emulsion) are added to 100 kg. of pigment. The printability of paper coated with the new composition was better than that of barium sulfate-coated paper.

Which of these 5 products and services can you use... from

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"Enclosing $1.00 — Send Patent License"

Well, perhaps there's a little more to your gaining use of Becco patents than just mailing your dollar in, but not much more. And certainly, no more money. The $1.00 really does cover it.

Becco has lots of patents, granted as a result of innovations in the use of Hydrogen Peroxide and other Peroxygen chemicals developed in Becco's Research Laboratories. But they don't do us a whole lot of good locked tightly in our safe. So, we long ago adopted the following policy:

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What do **we** get? You as a **customer** – we hope – but there's no obligation on your part. Just seems to work out that way, though – when we know enough about a particular peroxygen to hold a patent on its use, chances are we've also learned enough to produce it purer than anyone else. You benefit from this; we do, too.

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TECHNICAL BULLETINS

We got 'em— You can have 'em! They're FREE!

Years of experience in paper and pulp processing have produced a library of technical information which is available in individual bulletins, free on request. Use the coupon below to let us know which you'd like to receive.

No. 31 – Groundwood Bleaching Variables – A Statistical Approach.

No. 32 – H_2O_2 Bleaching of Chemicals and Mechanical Pulps.

No. 47 – Peroxide Bleaching of Pulps.

No. 48 – High-Density Pulp Bleaching.

No. 64 – Development Studies on Last-Stage H_2O_2 Bleaching of Alkaline Pulps.

No. 65 – Peroxide Bleaching of Southern Pulps.

No. 66 – Becco Laboratory Procedures for Pulp Bleaching, 1955 Ed.

No. 91 – Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps.

No. 92 – Peroxide Bleaching of Chemical Pulps.

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New Cold Caustic Bleach Process

Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.

*—Patent Pending

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Gentlemen:

Please have a Sales Engineer give me more information on Becco's Cold Caustic Bleach Process.

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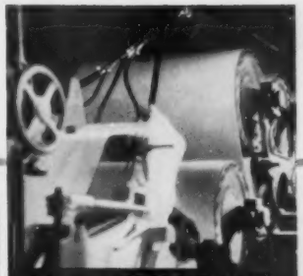

How BRIGHT Is BRIGHT?

That's a hard question to answer. It depends on how the pulp is treated.

Trouble is, paper can show an 86 level at the layboy, but by the time the paper is delivered, this has dropped to 82 or lower. With conventional bleaching methods, that is.

Many chemical pulp producers have found the answer to this problem in Becco's Dryer Steep Bleaching Process (patented, but licensed perpetually for one buck). Applied by means of spray pipes across the pulp sheet ahead of the dryers, Becco Hydrogen Peroxide increases brightness permanence and bleaches in transit. Often, in fact, an 86 layboy level **improves** to 88 by delivery time.

This is just one example. Becco has a vast amount of technical knowledge compiled from 31 years of experience with all types of pulp. If you'd like help with your pulp, free of any obligation, let us know with the coupon below.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York

Dept. PP-C

Gentlemen:

We would like help with our pulp. Please have a Becco Sales Engineer call.

NAME_____

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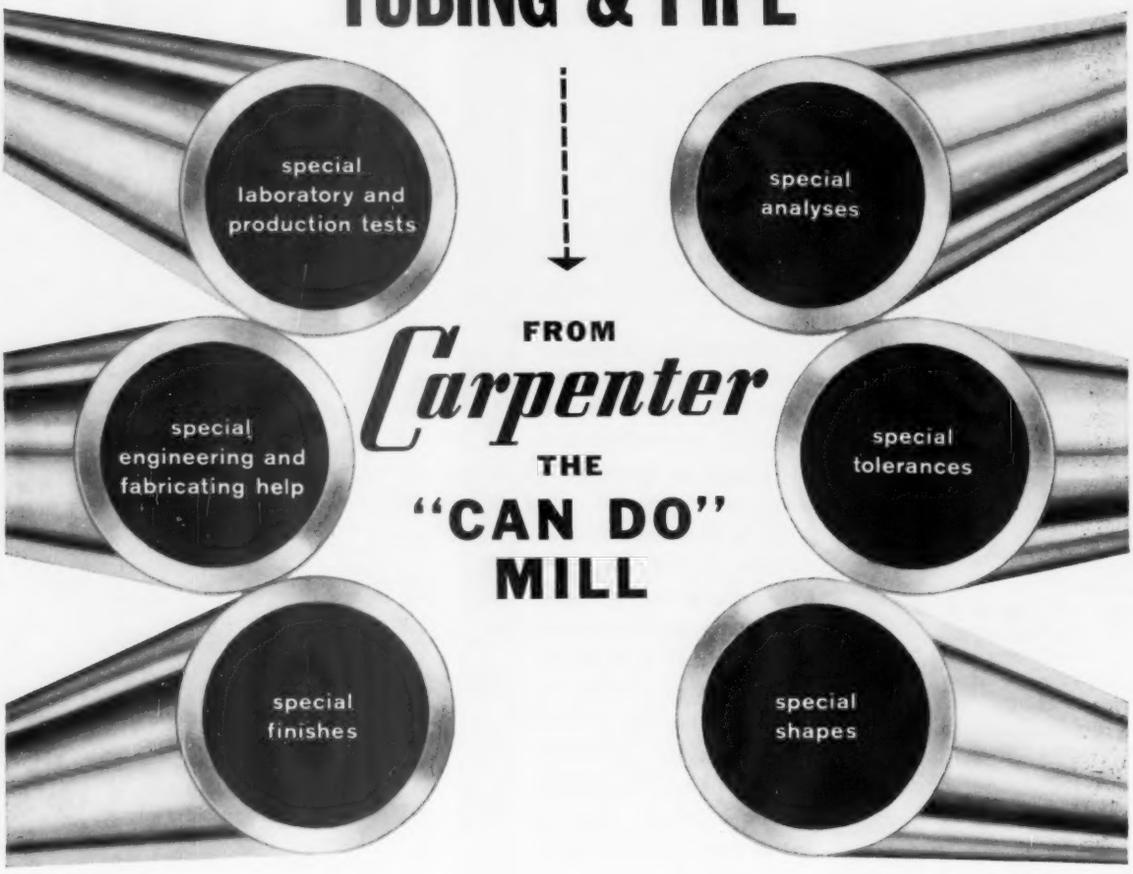
Where to get your "special needs" of Stainless and High Alloy TUBING & PIPE



Anytime you come up against *unusual* needs for stainless or high alloy tubing and pipe . . . anytime you are faced with hard-to-solve problems of corrosion, temperature conditions, fabrication, installation and design-engineering . . . it's time for you to consult with Carpenter. Save yourself time, worry and money by putting your "special needs" in our competent and experienced hands. Carpenter facilities and technical staff are geared to give you specialty services not available from other sources. Supplying plant engineers, equipment builders and product designers with the tubing, pipe and "know-how" to satisfy out-of-the-ordinary needs is a 32-year-old story with the Carpenter Alloy Tube Division. Whether your future needs are special or just ordinary, call in your Carpenter representative or contact The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

your master key to cost-saving corrosion control

Carpenter

Stainless & High Alloy Tubing & Pipe

Courtesy: Central Soya Company, Inc.

Alpha® Protein...

to get the sizzle of the steak...on paper

It takes a tempting, tantalizing illustration to get homemakers to put a product on their shopping lists. It takes Alpha Protein-processed paper to create this extra dimension of mouth-watering goodness on the printed page.

Frosty whiteness, improved opacity, and a smoother, more uniform surface are inherent benefits derived from using Alpha Protein as a coating adhesive. Moreover, because it speeds production and reduces cost, well-advised coating mill operators are specifying Alpha Protein, the largest-selling adhesive for high-solids coated offset paper.

Count on the Chemurgy Division as a reliable source, because its purified soy protein is carefully checked through all manufacturing stages to insure uniform quality between shipments.

Our service includes complete information, as well as specific attention to *your* problem.

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This advertisement reproduced on Alpha Protein-processed paper

NEW!

automatic profile record of paper and board thickness

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Put in a sample strip, push a button, and in a matter of minutes Foxboro's new Caliper Profiler automatically gives you a continuous chart record of sheet thickness — all the way across the sheet.

The Foxboro Caliper Profiler meets all standards published in TAPPI's Code T411 m-44. It's accurate to 1/10,000 of an inch — takes samples up to 0.120 of an inch thick.

The Profiler offers a new high in quality control. Its continuous profile record shows exactly where caliper is off. No more time-consuming spot checks with hand micrometers. No awkward, cumbersome testing machines.

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8 belts do a 10-belt job— 6 times as long

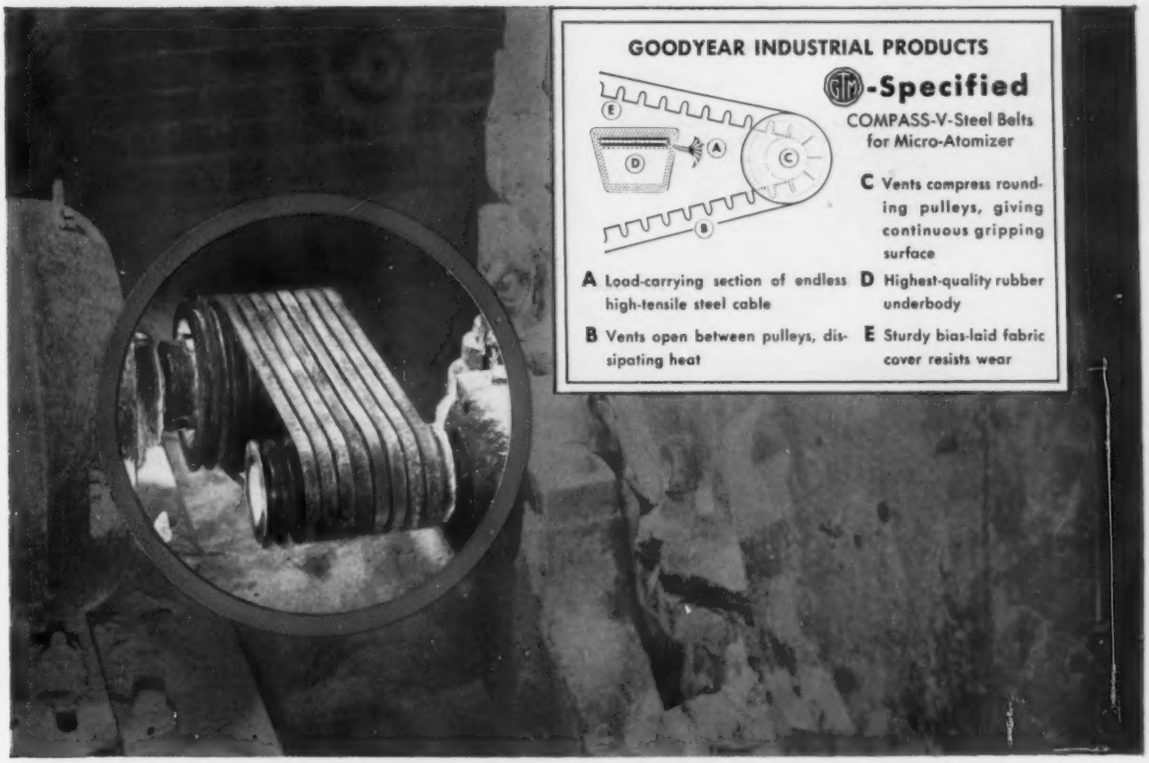
SMASHING chunks of nickel formate into small, dust-like particles is rugged business. What with the short-centered, dusty, 5,868 f.p.m. drives on their busy micro-atomizer, this Midwestern chemical plant was replacing whole sets of V-belts every 3 to 4 weeks.

Obviously, this heavy, month-after-month expense had to stop. Hopefully, they turned to the G.T.M.—Goodyear Technical Man. Confidently, he recommended COMPASS-V-Steel Belts with the Green Seal – built around airplane-type steel cable.

Thanks to this built-in strength, 8 of these super belts were able to handle what had always been a 10-belt job. And thanks to their unmatched toughness and dimensional stability, the G.T.M.'s belts had served a full 6 months at last report – looked good for at least 6 more.

And that's a typical experience. In countless belting jobs, COMPASS-V-Steel Belts with the Green Seal are giving longer service with fewer belts using smaller, less costly pulleys. Get the full moneysaving story from your Goodyear Distributor – or by writing Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on V-Belts, Hose, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*


GOODYEAR INDUSTRIAL PRODUCTS
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COMPASS-V-Steel Belts for Micro-Atomizer
C Vents compress rounding pulleys, giving continuous gripping surface
A Load-carrying section of endless high-tensile steel cable
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NEW REVOLUTIONARY

High Speed **ROTABELT**

REGD. TRADE MARK

SUCTION UNIT

- **increases wire and felt life**
- **reduces power consumption**
- **increases production**

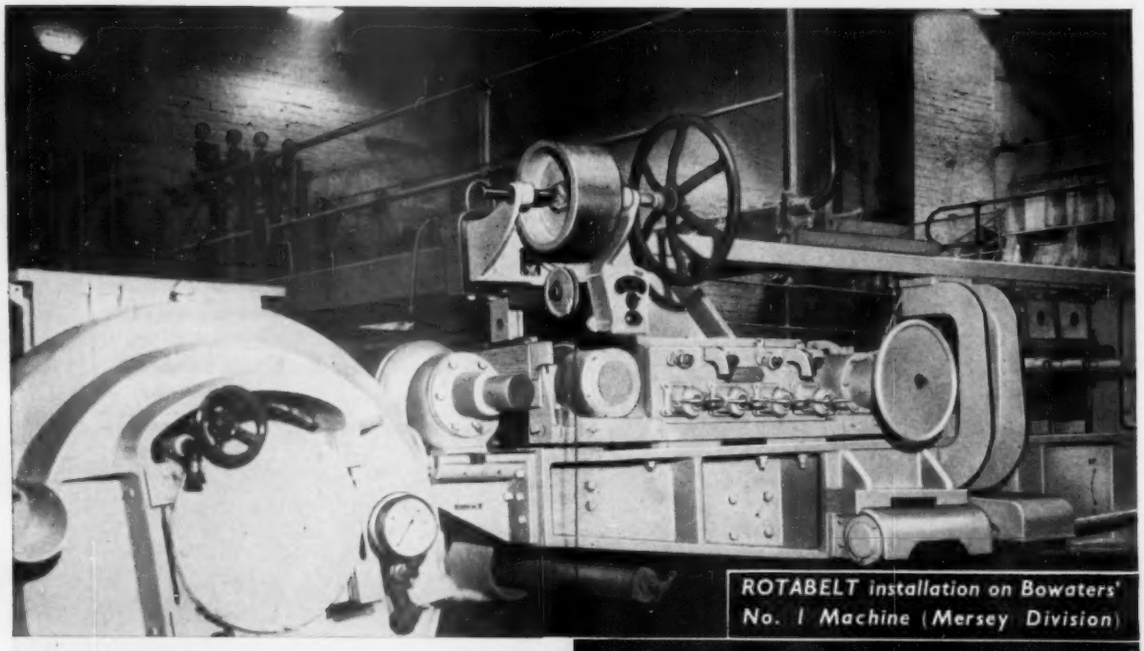
REPORT FROM BOWATERS

after more than twelve months in operation:

1 Wire life has more than doubled.

2 Couch drive load reduced by 31%.

3 Saving in Labor Cost by fewer wire changes.



ROTABELT installation on Bowaters' No. 1 Machine (Mersey Division)

BOWATERS' REPORT: *"We can say after running for one year the ROTABELT has proved to be an outstanding success."*

W. P. EVANS & SON LTD

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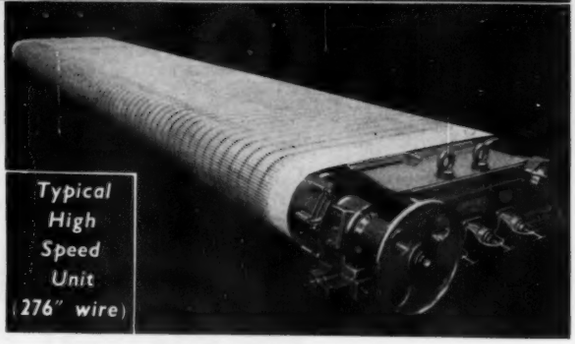

Typical High Speed Unit (276" wire)

Quality

everyone's problem!

Cleanliness, levelness of sheet and uniformity are paramount in producing paper suitable for today's high speed presses and converting machines.

Bauer Centri-Cleaners produce results your customers will notice, and like, immediately. Their unequalled efficiency removes light wood dirt, specks, shives and fine grit before the stock is delivered to the headbox.

Quality need not be a problem . . . just ask your Bauer representative for details, or write for Bulletin P-18A.

Bauer

CENTRI-CLEANERS For Paper and Board Machines

THE BAUER BROS. CO.

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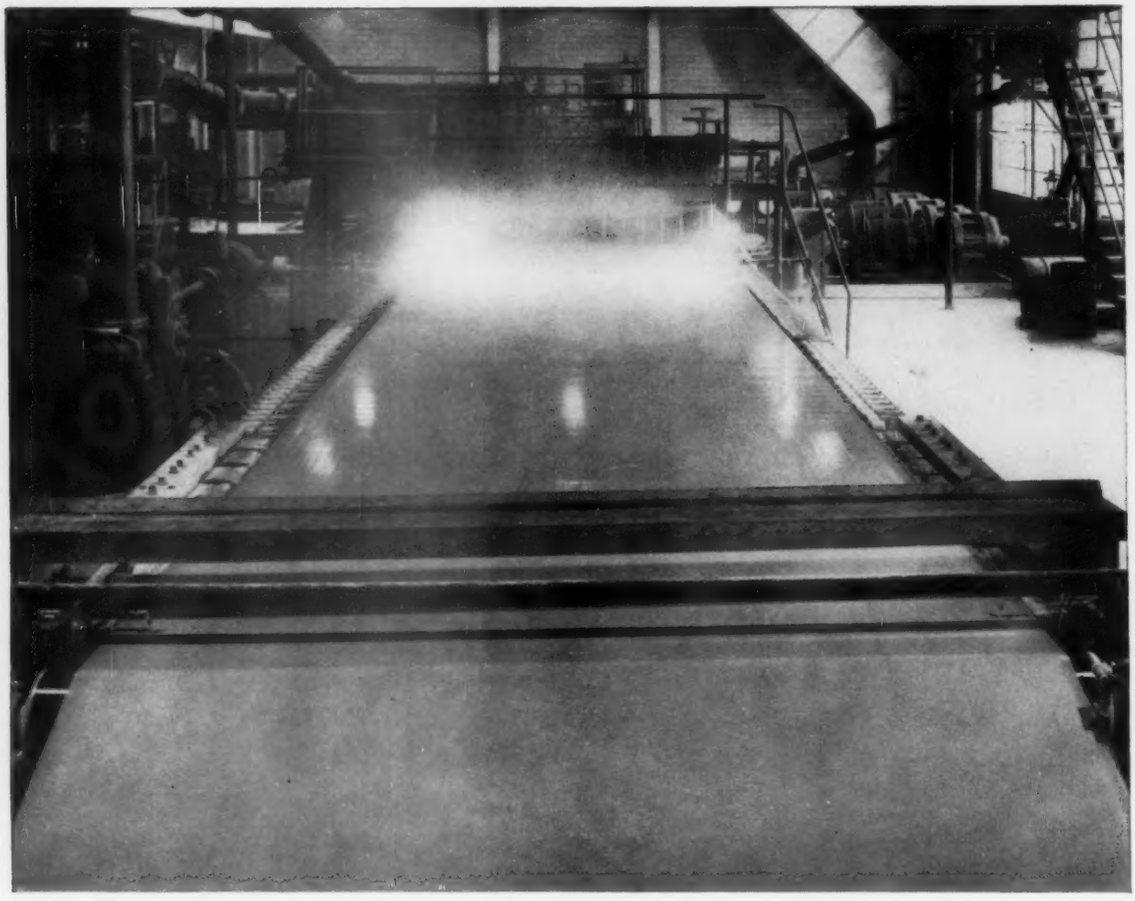


A Complete Starch Line... *tailor-made to your needs*

Today's complex papermaking operations require a wide range of starches—starches specifically designed to do a particular job. You'll find that the complete starch line offered by Corn Products Company includes types for every phase of modern papermaking. These starches are available in so many varieties that *they can literally be tailor-made to suit individual requirements* and production problems of individual plants!

For example, in beater sizing, preferred starches for improved surface qualities plus excellent bursting and tensile strength, include the many varieties of Globe and pre-cooked Amijel. For calendar sizing, you'll find a complete line of Claro and Eagle starches, as well as Globe starches for enzyme conversion. In this operation, Globe and Excello dextrines and thin-boiling Foxhead starches are also used. For general coating, with good viscosity at high solids content, use Claro and new improved Ten-O-Film starches.

And the research staff of Corn Products Company, largest in the industry, is constantly at work developing new products to meet the changing needs of modern papermaking.

Our technical representatives are completely versed in the problems that arise with wet end additives. Their impressive field experience and continuing research into starch, evidenced by frequent publications in trade and technical journals*, is always at your service. Take full advantage of the facilities and experience of the world's largest corn processors—call our nearest sales office or write direct.

Fine products for the Paper Industry: GLOBE® • EAGLE® • FOXHEAD® • CLARO® • AMIJEL®
CORAGUM® • TEN-O-FILM® starches • GLOBE® • EXCELLO® • LAM-O-DEX® dextrines and gums.

CORN PRODUCTS SALES COMPANY 17 BATTERY PLACE, NEW YORK 4, N.Y.

*A reprint on the results of corn starch usage is available on request from our New York office.

any way you look at it

(and this is from the back)

an Appleton Winder makes sense!

Makes friends, too: past purchasers of Appleton Winders account for 75% of present sales.

Here's probably why:

Above view displays with a clarity that can't be missed the clean uncluttered design for fast, simple threading and easy accessibility that can't be matched.

Requires less floor space and overhead than any other winder of like capacity. Note low silhouette.

The precision and reliability that stems from 75 successful years of paper machine engineering.

Complete push-button control that *delivers* man-and-a-half operating economy and efficiency.

There's a fully descriptive brochure on Appleton Winders that's yours for the asking. Also, details of our lease-purchase plan will be sent upon request.

APPLETON MACHINE COMPANY

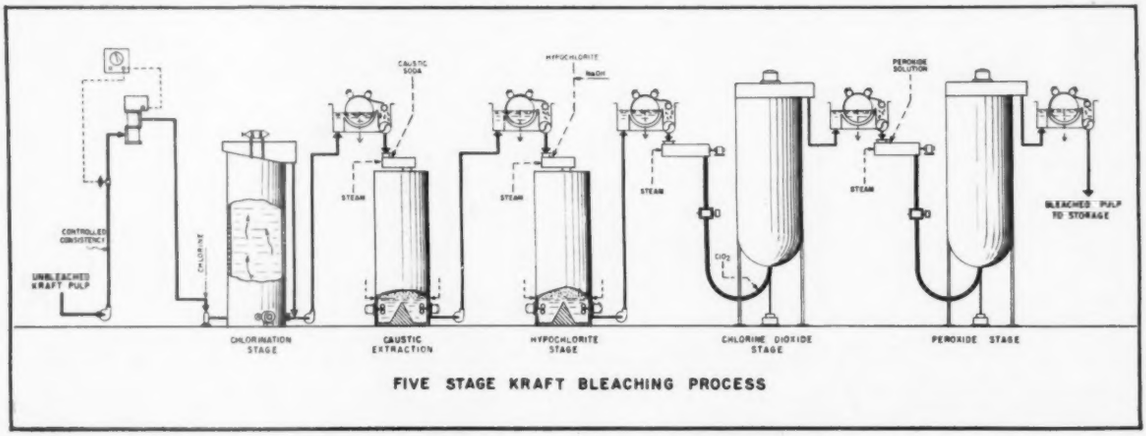
APPLETON, WISCONSIN

New Marathon Southern mill for 5-stage bleaching

"WHAT A MILL!"
says Marathon's
Tom Bigbee*

"This new mill of ours at Naheola, Ala., covers 78 acres, will consume 200,000 cords of pulpwood annually. About 30% will be hardwoods such as gum, cottonwood, bay magnolia and willow—70% southern pine. This timber produces a fine-quality sulfate pulp, and the mill will be turning out over 100,000 tons of it each year with the new 5-stage bleaching process."

**Trade character of Marathon Southern Corp., a subsidiary of American Can Company*



FIVE STAGE KRAFT BLEACHING PROCESS

TYPICAL 5-STAGE BLEACHING SYSTEM: (1) chlorine for 30 minutes, (2) sodium hydroxide for 90 minutes, (3) hypochlorite for three hours, (4) chlorine dioxide for four hours, (5) hydrogen peroxide for four hours. Brightness reversion tests show that the stability of pulp produced by this process is superior to that of pulp bleached by other methods. Result: higher-quality paper products. For more information on this system call Du Pont.

is the first designed process using Du Pont peroxide

This modern process gives kraft pulp excellent brightness and brightness stability—resulting in whiter paper products for Marathon's customers

Here's the first mill specifically designed to use the new 5-stage bleaching process for kraft pulp—the brand-new Marathon Southern Corp. Mill at Naheola, Ala. This new process combines a mild hypochlorite treatment, a mild chlorine dioxide treatment and a final peroxide treatment . . . takes advantage of the best features of all three bleaching agents.

Here's how Marathon and Du Pont worked together . . .

Marathon was familiar with the use of peroxide in bleaching northern sulfate pulp. Subsequently, more than three years ago, Du Pont personnel discussed with Marathon officials the possibilities of bleaching southern pulp with peroxide. To prove peroxide's advantages, scores of pulp bleaching tests were conducted. Other studies showed that the peroxide process would cost less than one using two chlorine dioxide stages, while producing pulp of comparable brightness. Marathon chose the process on the basis of pulp quality and favorable operating costs.

The advantages of 5-stage bleaching . . .

This new process is a practical method of meeting today's market demands for high-strength kraft of superior brightness and brightness stability. It's a flexible process, too, because pulp can be removed at different stages to obtain the brightness level desired—whether 70 or 85 G.E. or higher. In addition the 5-stage bleaching process using "Albone" hydrogen peroxide can be adapted to any mill that now has one or more stages for chlorine dioxide bleaching.

Whether you're planning a new mill or modernizing an older one, Du Pont's unequaled experience can help save you time and money.

FOR MORE INFORMATION about the 5-stage process for kraft bleaching, just write us at the address below, or phone Wilmington, Delaware, PRospect 4-4698.

PEROXIDES **ALBONE®** hydrogen peroxide **SOLOZONE®** sodium peroxide

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TOM BIGBEE SAYS:

"Marathon Southern is 78 acres of quality control!"

"This Marathon Southern mill at Naheola is big . . . and efficient!

"Did you know that the area cleared for the mill here on the banks of the Tombigbee River covers 78 acres . . . and every one of those acres is covered by the pinpoint accuracy of fully instrumented quality control.

"From the time the Southern pine logs are rolled into the stream that takes them to the chipper, through the digester and on through every step of the way to becoming paper or paperboard—instrumented quality control is in command.

"Two new high-speed paper machines are rolling out large tonnages of paper and paperboard. Naheola pulp is being exported for consumption by European mills. And even as these products find their way to converters and paper merchants, a tremendous new warehouse—for pre-shipment storage of finished goods—is taking shape.

"Yes, really quality things are happening at Naheola, where the most modern mill in the industry is in full swing turning fine Southern timber into fine pulp and paper products—a dependable source of supply for dependable quality products."

MARATHON SOUTHERN CORPORATION
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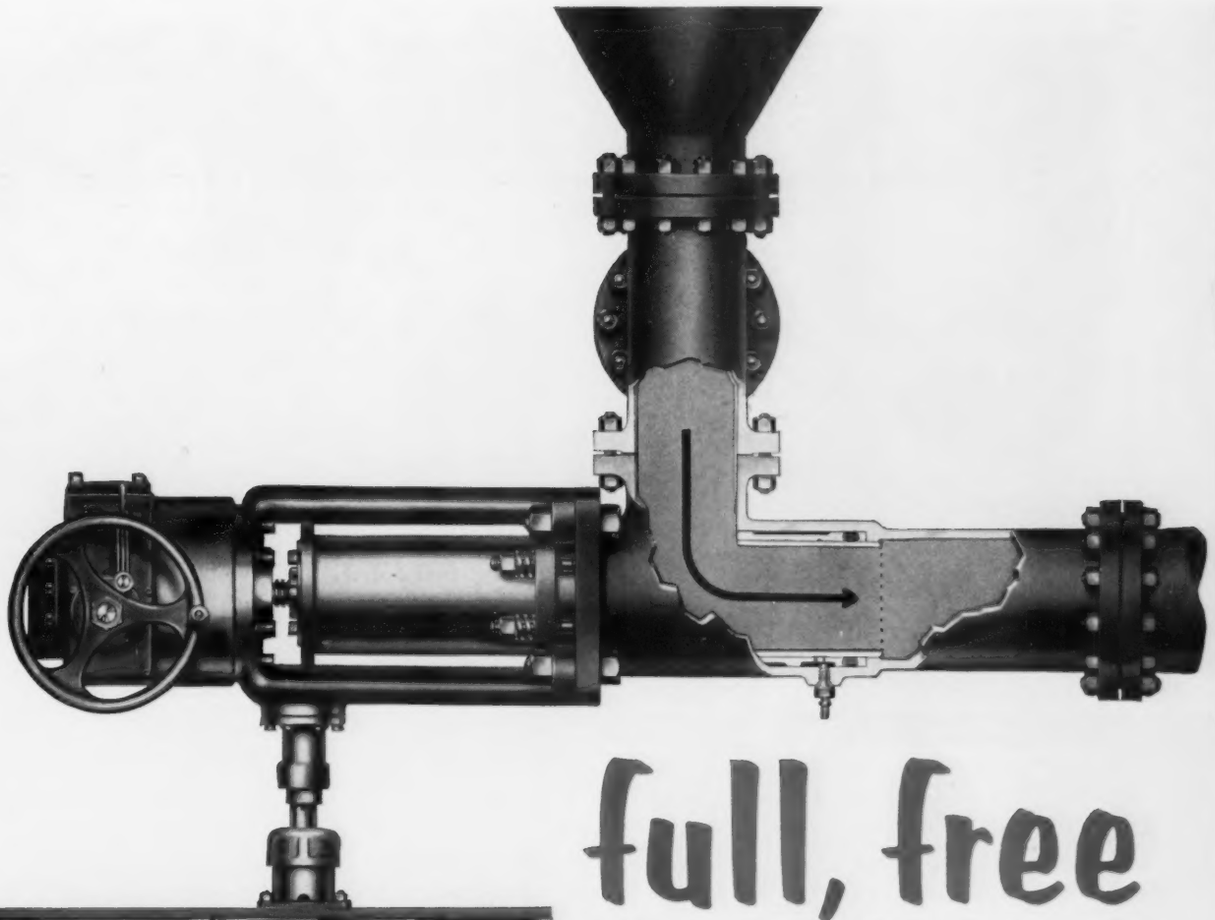
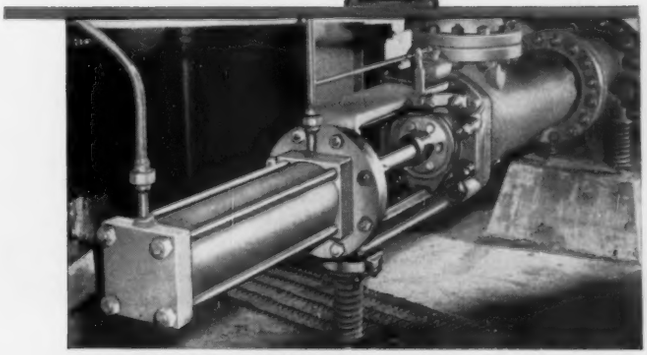
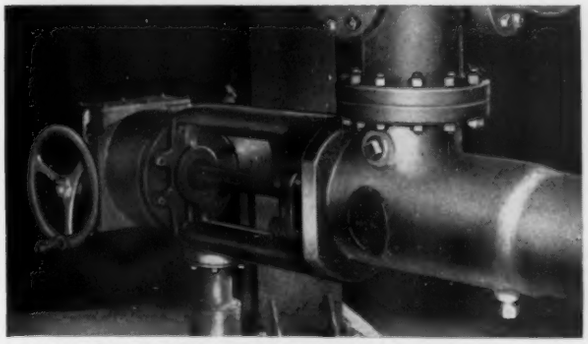


full, free digester discharge



HYDRAULIC-OPERATED Yarway Digester Blow Valve—one of six installed at large North Carolina paper mill.



MOTOR-OPERATED Yarway Digester Blow Valve—one of eight installed at large Canadian paper mill.

Digesters blow fast and clean with YARWAY Seatless Blow Valves.

The hollow sliding plunger has no pockets where wood chips or tramp materials can hang up.

All Yarway Digester Valves have full pipe area, permitting fast discharge with minimum pressure drop. Comparisons show greater discharge area—reducing blowing time, increasing number of cooks.

Scores of pulp mills report *lower operating costs* and *increased production* due to YARWAY Digester Blow Valves. One large mill found *savings in operation and maintenance the first year more than paid the cost of their 4 new Digester Valves!*

YARWAY Seatless Digester Valves can be furnished either with electric motor or hydraulic cylinder units. Both are remote controlled. Bulletin B-441 gives the whole story. Write for it.

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YARWAY · · · **DIGESTER BLOW VALVES**

YES

OR NO

Ten-second quiz for people who buy, operate or maintain electrical adjustable speed drives

YES	NO	
☐	☐	Adjustable speed drives should be simple to install, operate, and should require little or no maintenance.
☐	☐	Adjustable speed drives should offer a wide range with either constant torque or constant hp, and should offer smooth acceleration and deceleration.
☐	☐	Adjustable speed drives should offer high operating efficiency . . . and be adaptable to a wide range of motor sizes.
☐	☐	Adjustable speed drives should provide the required flexibility and inherent reliability for any type of application . . . intermittent or continuous.

If you have answered "yes" to the above questions, then you will be very much interested in obtaining complete information about the *all-new, static-powered* Westinghouse Adjustable Voltage Reactifier drive . . . (Type AVR). This new drive not only meets all of the above requirements, but also gives you many other advantages to perform a better job at lower cost. Ask your Westinghouse sales engineer to show you exactly where and how this new drive can benefit you. Or, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

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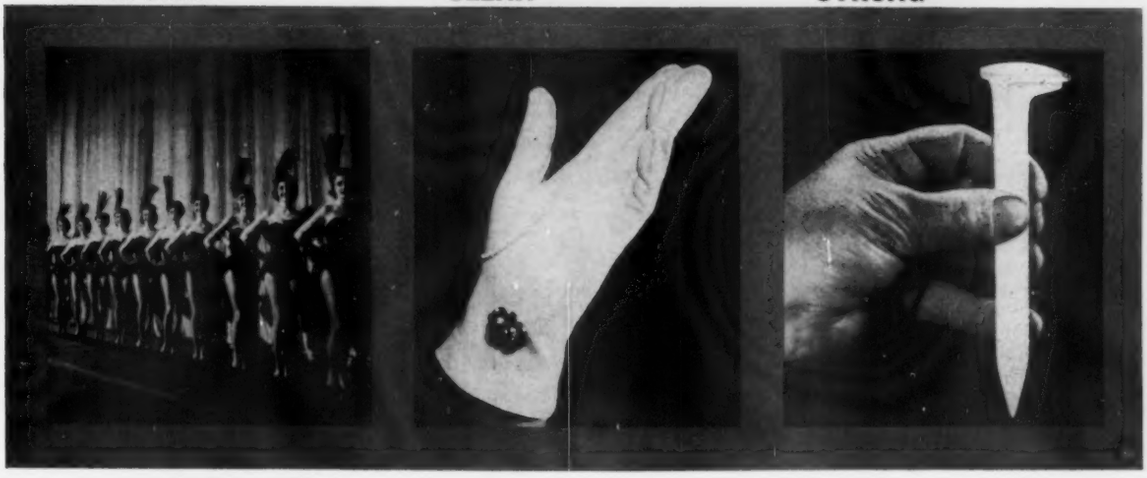

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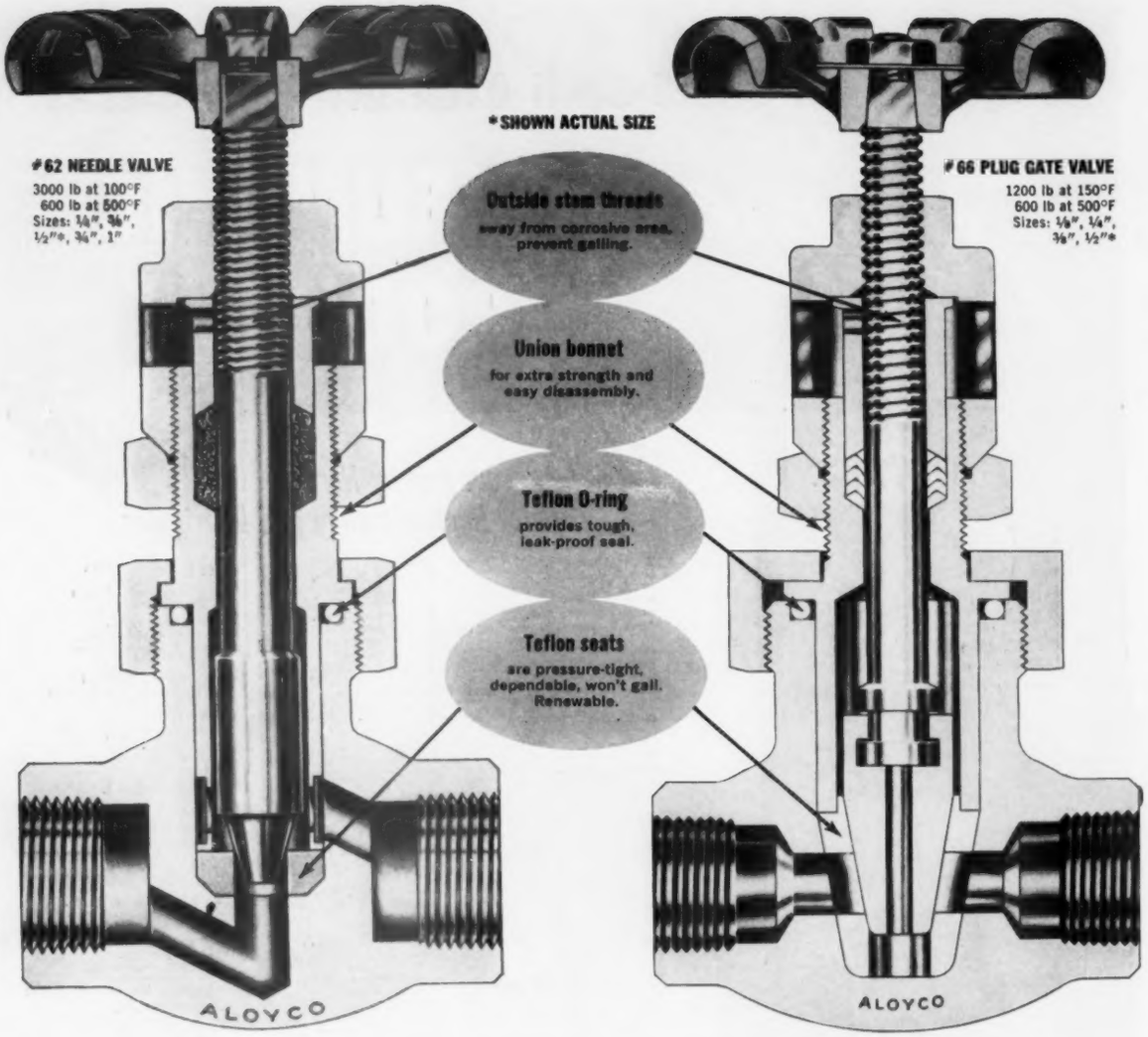

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For more facts write to Alloy Steel Products Company 1316 West Elizabeth Avenue, Linden, New Jersey...the one manufacturer specializing in Stainless Steel Valves exclusively.

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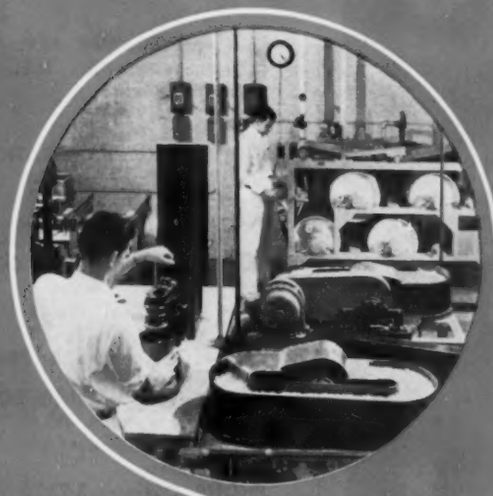

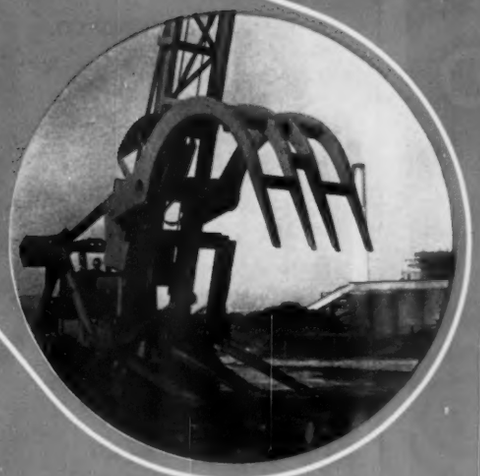

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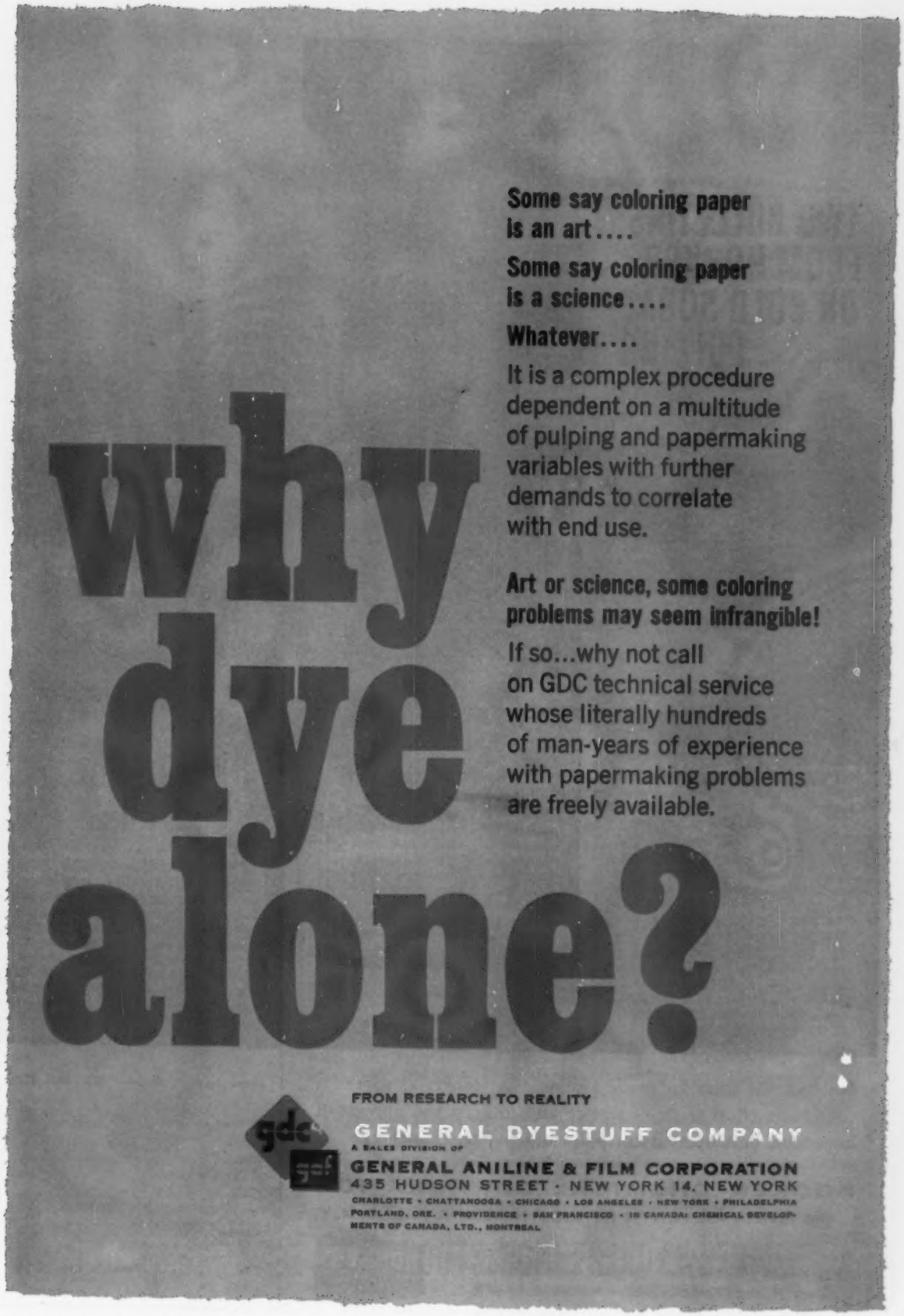
Some say coloring paper is an art....
Some say coloring paper is a science....
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TWO BULLETINS FROM HOOKER ON COLD SODA PULPING

Special Considerations toward Improvement of Cold Soda Pulping Process. This recent paper gives results from experimental and practical work with southern red oak, white oak, soft maple, elm, ash, and yellow birch pulps.

The work was directed toward ways to improve the quality of paper and boards made from these various hardwoods. Charts and tables summarize data on such liquor absorption factors as pressure, vacuum, particle size, moisture content, surfactants, and presteaming.

This bulletin is a reprint of a paper prepared by Kenton J. Brown, chemical engineer of the Forest Products Laboratory, Forest Service, U. S. Department of Agriculture. Circle 252 on the coupon for a copy.

Cold Soda Pulping of Aspen by Improved Methods describes the results of work done under Hooker sponsorship at the Forest Products Laboratories. It describes a practical process for developing corrugating board and news-type papers from cold steeped aspen pulp. The resulting board shows higher strength properties than four other boards made from commercial neutral sulfite semi-chemical pulp. The paper showed itself suitable in every way for magazine-type book papers. The bulletin discusses the process and its results in detail. Circle 250 on the coupon for a copy.

NEW BULLETIN ON BLEACHING KRAFT PULPS

Three-Stage Bleaching of Kraft Pulps to High Brightness describes a new process for bleaching kraft pulp to 85 to 87 brightness with excellent strength retention and moderate color reversion. The process involves the inclusion of a small amount of chlorine dioxide in the chlorination stage and hypochlorite with the caustic soda in the extraction stage. The process requires minimum capital investment. For a copy of this paper, circle 223 on the coupon.

Bulletins like these are made available by Hooker as part of a continuing effort to be of service and to keep you abreast of important developments in pulp and paper technology.

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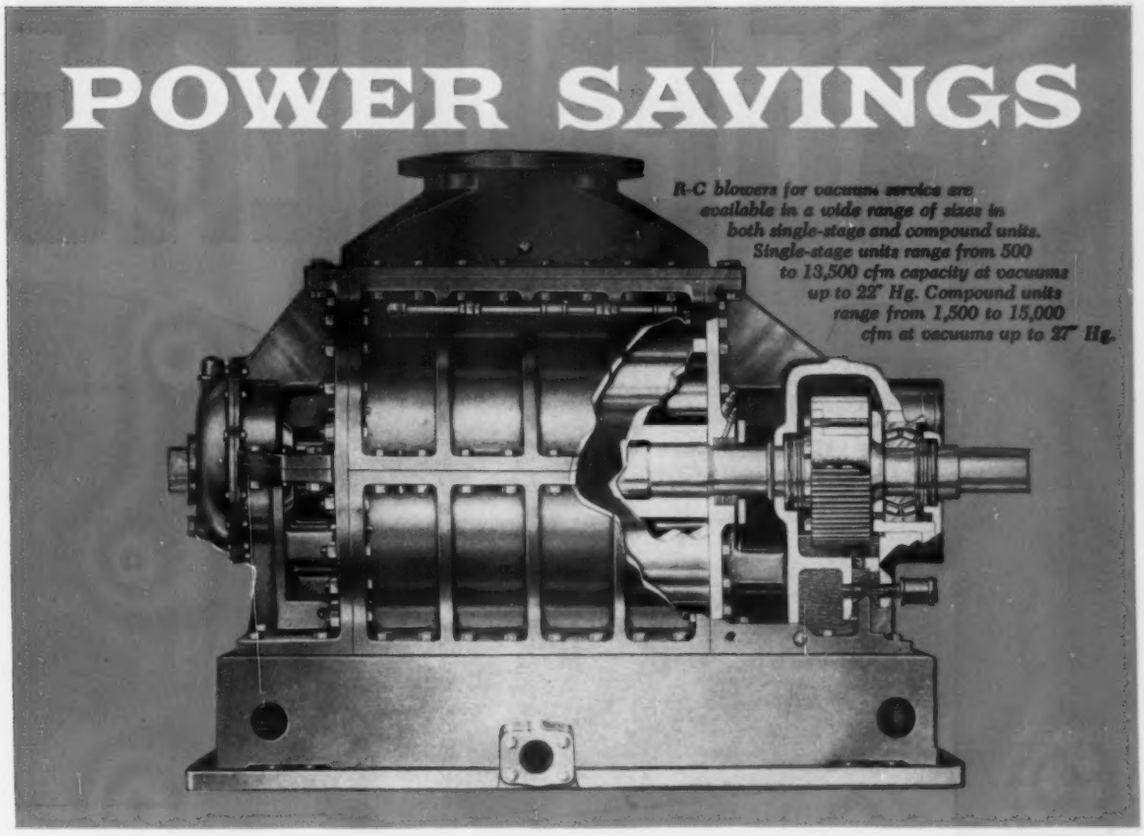

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For additional data, please refer to pages 565-568 in **CHEMICAL ENGINEERING CATALOG,** *our section in* **MECHANICAL CATALOG** *or write for* **Bulletin VP-158.**

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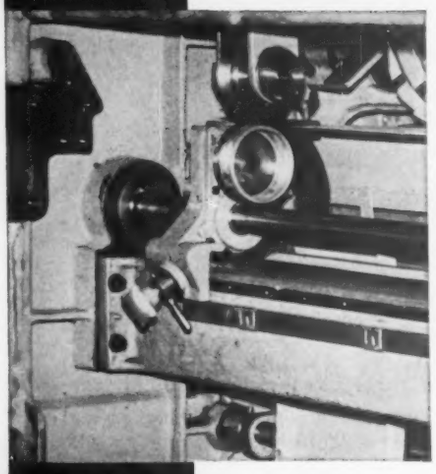

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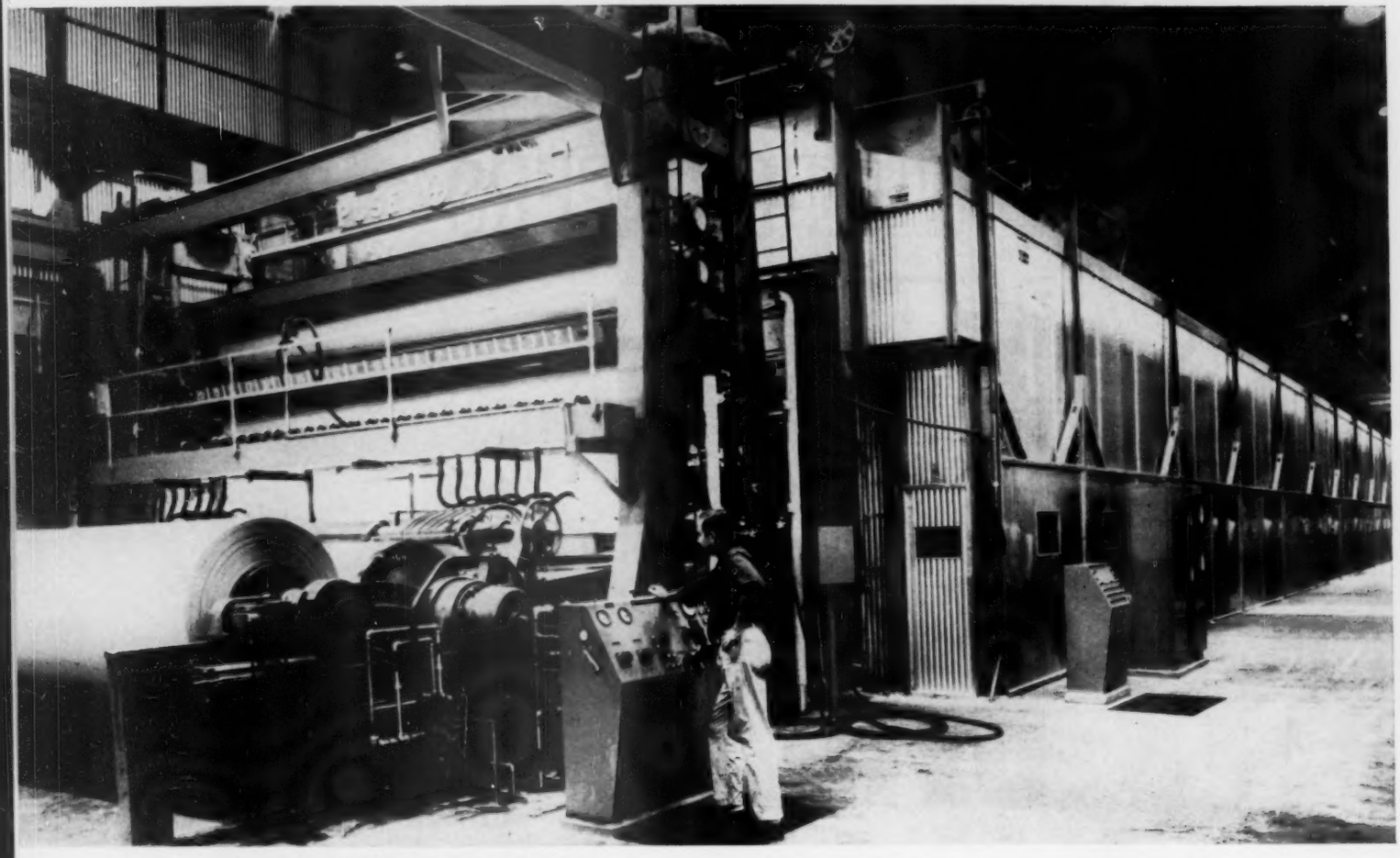
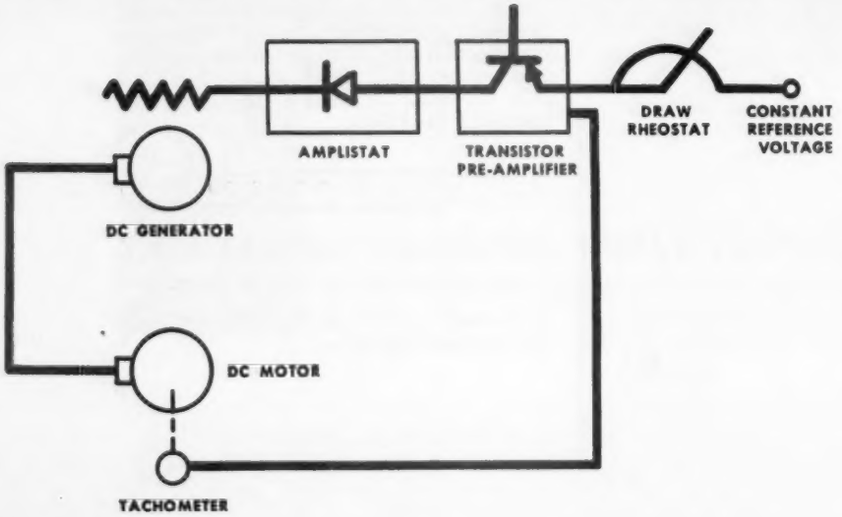


Designed for newsprint production at 2500 FPM, Southland's new No. 4 paper machine was built by Pusey and Jones Corporation, powered by a General Electric multiple-generator sectional drive. The new machine, 270 inches in width, uses 14 G-E drive motors totalling more than 3000 horsepower.

GENERAL ELECTRIC DRIVES ARE SYSTEM ENGINEERED

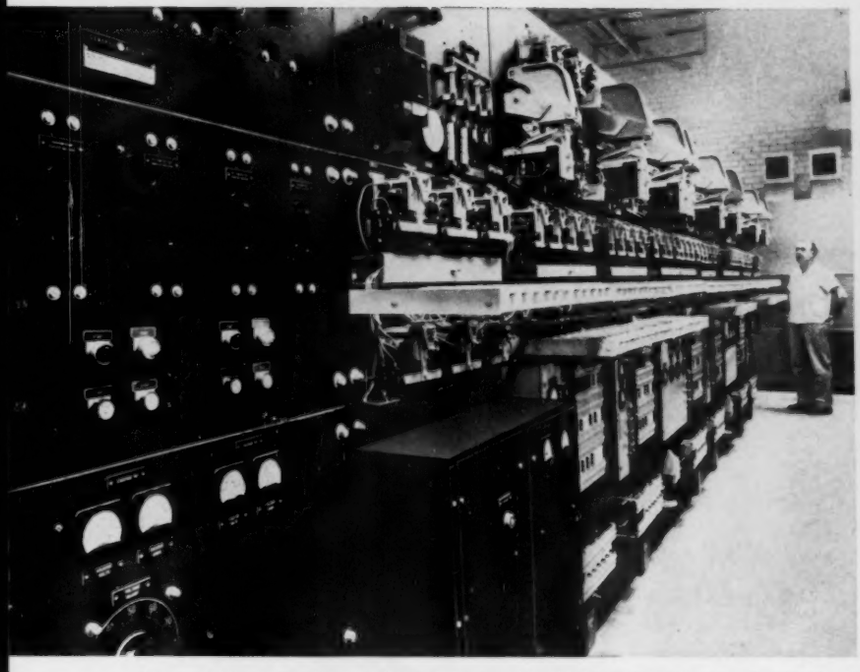
How the G-E Multiple-Generator System Works . . .



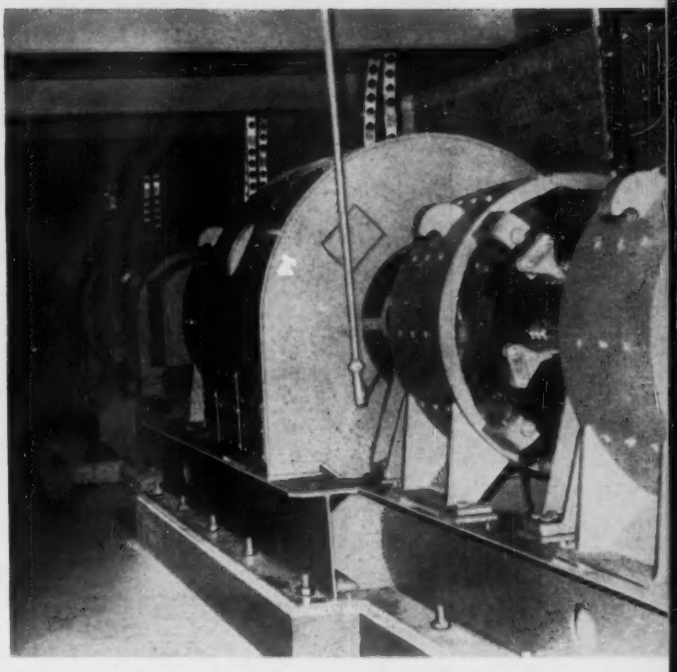
Each section motor operates on generator voltage control. The motor speed is measured by a tachometer, whose output voltage is compared with the over-all machine's constant reference voltage. With even the slightest difference between the two voltages, the transistorized pre-amplifier responds instantly through an amplistat regulator to change the generator voltage, maintaining the exact desired motor speed.

specified General Electric Drive featuring new transistor amplistat

HERE'S WHY . . . •Improves machine availability
•Maximum machine flexibility
•Reduces electrical maintenance



General Electric static speed regulator provides high accuracy, fast response control. Amplistat power amplifier and completely sealed transistor pre-amplifier give long-life, trouble-free operation and reduce costly unscheduled downtime.



Dependable power is supplied by two G-E MG sets, each driven by a 1500 hp synchronous motor. Separate generator for each section adds flexibility, simplifies operation and maintenance.

FOR ALL PAPER MAKING APPLICATIONS

Southland Paper Mills' new No. 4 paper machine at their Lufkin, Texas mill, powered by a General Electric multiple-generator sectional drive, presents a major advance in drive systems for the paper industry.

New technology, such as use of transistors and magnetic amplifiers in the G-E static speed control, provides trouble-free, reliable operation to increase machine availability and reduce maintenance time and expense. Result: *greater output.*

Co-ordination of the equipment into a flexible, easy-to-expand electrical system resulted from close co-operation between Southland engineers and General Electric application and service engineers.

General Electric engineering services also can help you design, equip and install a well-integrated electrical system suited to your specific needs. For more information on paper-mill drives, call your nearest General Electric Apparatus Sales Office or write to General Electric Co., Section 655-23, Schenectady 5, N. Y.

SYSTEM ENGINEERED DRIVES FOR PAPER INDUSTRY

GENERAL ELECTRIC

"ESCO STAINLESS FITTINGS help us fight Corrosion"

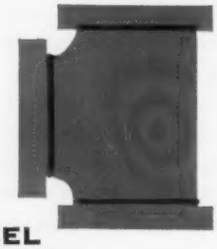
states Carl Carlson, plant manager for Chipman Chemical Company, Portland, Oregon.

"We have found *ESCO* cast alloy 45S fittings to be of consistently excellent quality. They give us the kind of service we expect from a high quality stainless steel."

"We use *ESCO* fittings extensively throughout our plant", continues Carlson, "where we manufacture 2,4D and other weed killers as well as many fungicides and insecticides."

Production of 2,4D is a highly corrosive process. Aqueous salts of organic acids, combined with hydrochloric acid, flow through the fittings at temperatures up to 250°F. and at pressures up to 100 psi.

ESCO cast fittings and flanges are available from local warehouse stocks in a complete range of types, sizes and alloys to help solve your corrosive problems.



Call your nearby ESCO representative today for details, or write direct. Ask for ESCO Fittings Catalog 156, and ESCO Alloy Notebook No. 7, "What is Corrosion?".

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ELECTRIC STEEL FOUNDRY COMPANY

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.

Offices in Most Principal Cities

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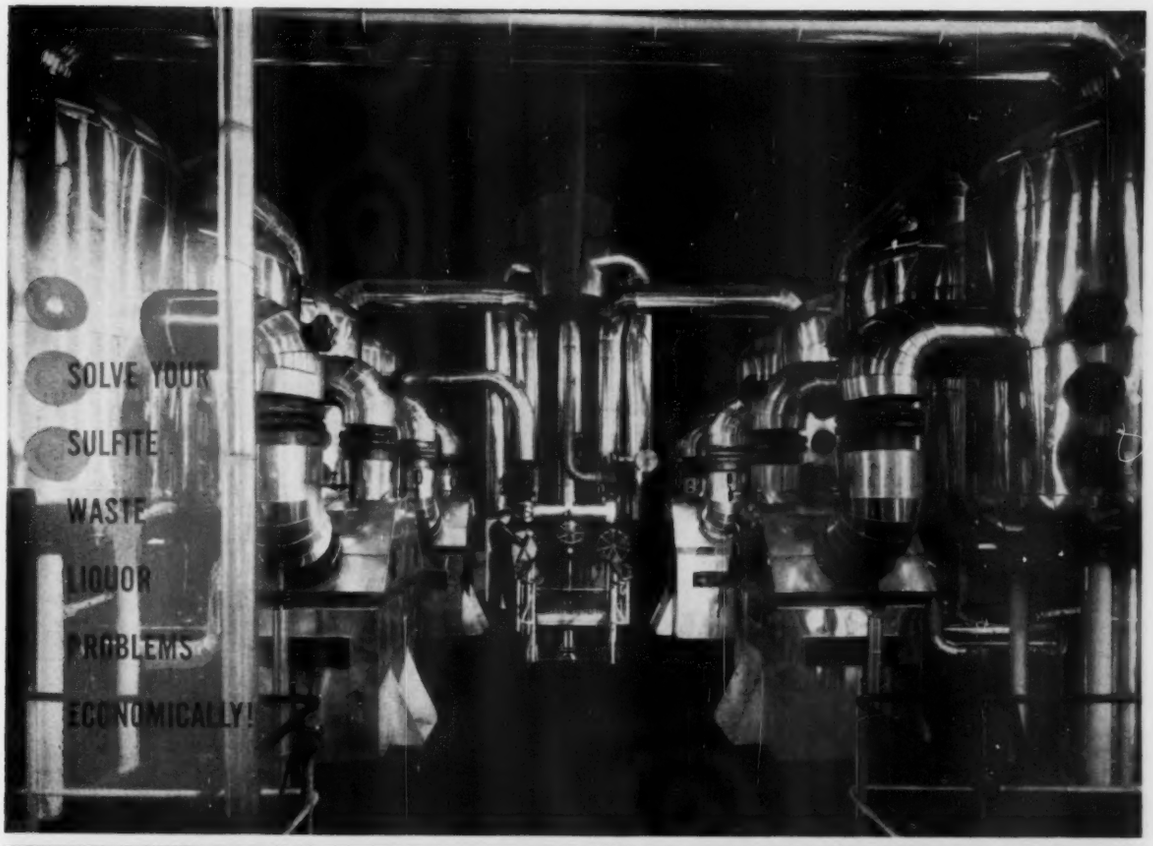
IN CANADA ESCO LIMITED



Rosenblad CHANNEL-SWITCHING* EVAPORATORS

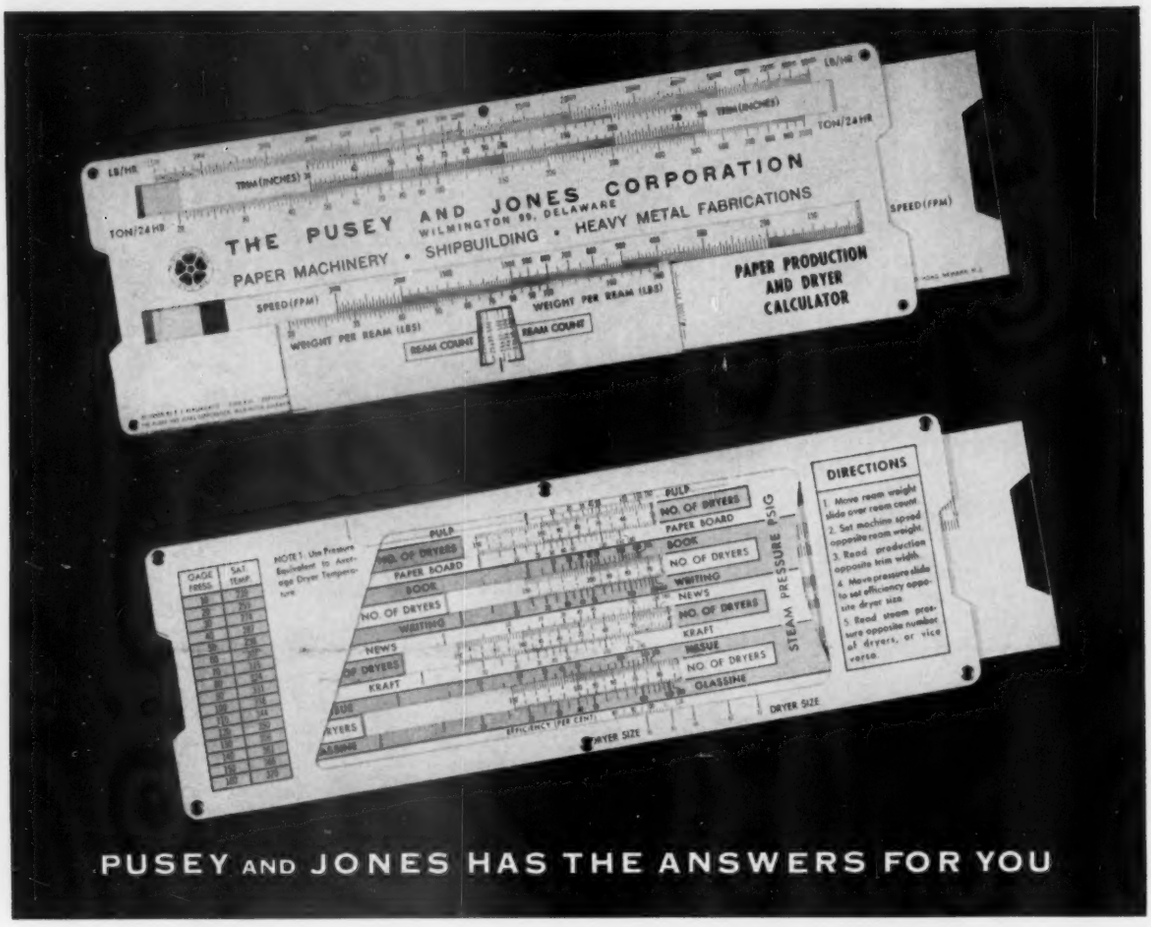
Operators of more than 30 installations in virtually every pulp-producing country agree that Rosenblad Sulfite Liquor Evaporators are a simple, effective solution to the problem of sulfite waste liquor disposal.

The unique "switching" arrangement of Rosenblad Sulfite Evaporators, in which the two identical sides of the installation are reversed periodically, virtually eliminates scaling and fouling not only on Ca-base but also on Na, H_3N and MgO-base. Rosenblad Sulfite Evaporators have been on-stream for as long as 13 years with virtually negligible maintenance costs and no lessening of capacity or dependability.

We will be happy to provide full information on how Rosenblad's pioneering work in the design and manufacture of evaporators for sulfite waste liquor can provide long-term economies in your operation. Please contact us for details.

*Patented, U. S. & Canada

ROSENBLAD CORPORATION
1270 Sixth Avenue • New York City
6999 Cote Des Neiges Road • Montreal 26, Quebec


THE PUSEY AND JONES CORPORATION
WILMINGTON 99, DELAWARE
PAPER MACHINERY • SHIPBUILDING • HEAVY METAL FABRICATIONS
PAPER PRODUCTION AND DRYER CALCULATOR
DIRECTIONS
1. Move ream weight slide over ream count
2. Set machine speed opposite ream weight
3. Read production opposite trim width.
4. Move pressure slide to set efficiency opposite dryer size
5. Read steam pressure opposite number of dryers, or vice versa.
STEAM PRESSURE PSIG
DRYER SIZE
EFFICIENCY (PER CENT)

PUSEY AND JONES HAS THE ANSWERS FOR YOU

With Pusey and Jones' new free Calculator you can do a fast, accurate job of figuring ream counts, dryer size, type of paper and other mill data.

Just fill out the coupon—it will bring you Pusey and Jones' new Paper Production and Dryer Calculator—a new kind of slide rule that will save you many hours in your day-by-day mill operations.

It's easy to use, sturdily constructed and convenient—measures only 9½ inches by 3⅛! Not for sale anywhere, it's available *only* from the first company in the United States to specialize in the design and manufacture of paper-making machines. See a Pusey and Jones representative or write direct.

What you can do* with PUSEY AND JONES' NEW PAPER PRODUCTION AND DRYER CALCULATOR:

Figure This:	When You Know:
Daily and hourly production	Ream weight and count, speed and trim
Equivalent ream weight	Both ream counts
Speed	Desired production, any ream weight-count combination and trim
Number of dryers needed in a new machine	Weight, ream count, speed, type of paper and steam pressure
Dryer efficiency in your present machine	
Extra dryers or increased steam pressure required in rebuilding for greater production, change of speed, different weight or conversion to another type of paper	

**At least 8 different calculations can be made quickly and easily. Above calculations may be reversed or altered depending on knowns and unknowns.*

Please send one of your new Paper Production and Dryer Calculators.

NAME

POSITION

COMPANY

STREET ADDRESS

CITY ***ZONE***

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THE PUSEY AND JONES CORPORATION

WILMINGTON 99, DELAWARE

TANK CAR DELIVERY OF MOLTEN SULPHUR

Loading Tank Cars at one of our mines

...an important phase of TGS Service

This is a service of interest to the rapidly increasing number of companies preferring to receive their sulphur deliveries in molten form so that they can transfer directly from cars into consumption. We are equipped now to deliver molten sulphur by tank car from all mines and recovery plants to any place in the country. Detailed instruction sheets and drawings are available on request for those in the planning stage or who do not have adequate or proper facilities for handling and storing molten sulphur.

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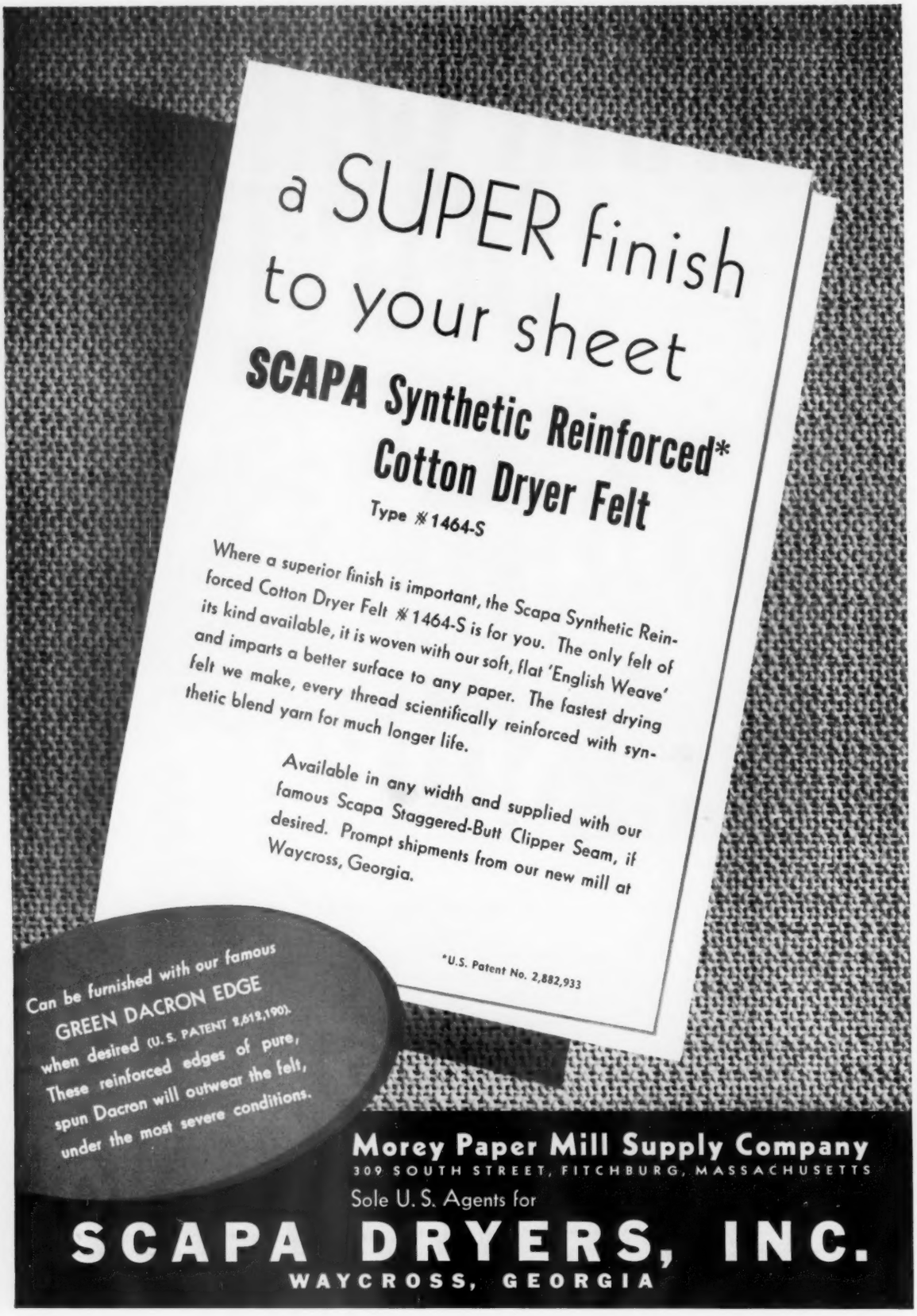
Sulphur Producing Units: Newgulf, Texas • Spindletop Dome, Texas • Moss Bluff, Texas • Fannett, Texas • Worland, Wyoming •


a SUPER finish
to your sheet
SCAPA Synthetic Reinforced*
Cotton Dryer Felt
Type ✳1464-S
Where a superior finish is important, the Scapa Synthetic Reinforced Cotton Dryer Felt ✳1464-S is for you. The only felt of its kind available, it is woven with our soft, flat 'English Weave' and imparts a better surface to any paper. The fastest drying felt we make, every thread scientifically reinforced with synthetic blend yarn for much longer life.
Available in any width and supplied with our famous Scapa Staggered-Butt Clipper Seam, if desired. Prompt shipments from our new mill at Waycross, Georgia.
*U.S. Patent No. 2,882,933
Can be furnished with our famous GREEN DACRON EDGE when desired (U.S. PATENT 2,612,190). These reinforced edges of pure, spun Dacron will outwear the felt, under the most severe conditions.
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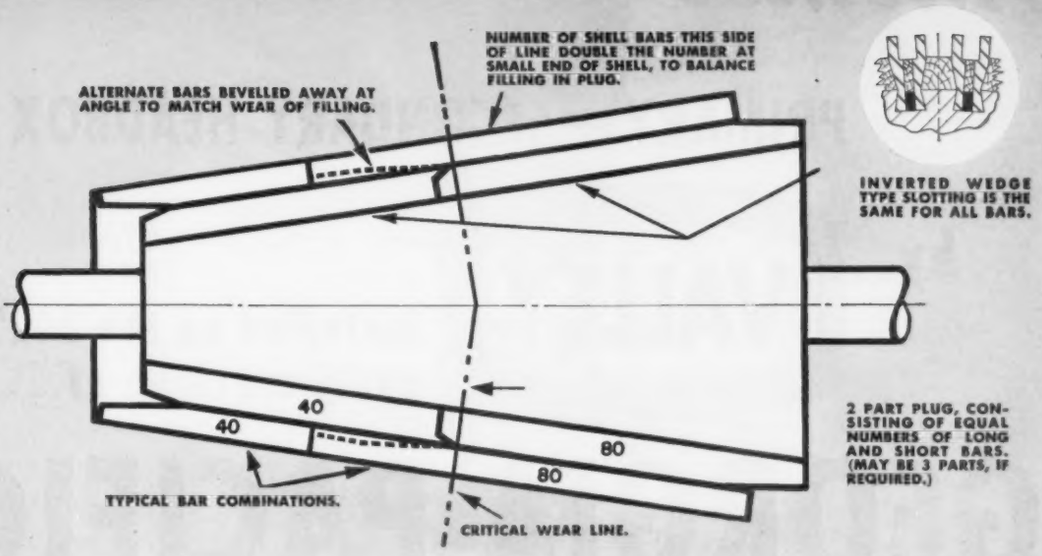
Sole U. S. Agents for
SCAPA DRYERS, INC.
WAYCROSS, GEORGIA

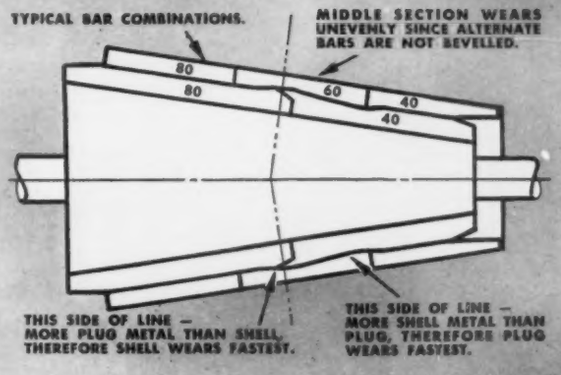
COMPARE Jones Nowave DESIGN


NUMBER OF SHELL BARS THIS SIDE OF LINE DOUBLE THE NUMBER AT SMALL END OF SHELL, TO BALANCE FILLING IN PLUG.
ALTERNATE BARS BEVELLED AWAY AT ANGLE TO MATCH WEAR OF FILLING.
INVERTED WEDGE TYPE SLOTTING IS THE SAME FOR ALL BARS.
40
40
80
80
2 PART PLUG, CONSISTING OF EQUAL NUMBERS OF LONG AND SHORT BARS. (MAY BE 3 PARTS, IF REQUIRED.)
TYPICAL BAR COMBINATIONS.
CRITICAL WEAR LINE.

Patented Nowave design is a feature of all Jones Adapta-Plug and Fulbar Fillings. It provides precise plug and shell alignment, results in: closer contact throughout life of the bars • straighter bar wear — no waves or shoulders • accurate plug settings • efficient stock treatment — more uniform refining • longer filling life • improved finished product.

with conventional plug and shell fillings

Conventional Jordan filling causes wavy plug wear with resulting high and low spots in the plug and shell bars. Naturally this means inefficient refining, unnecessary waste and maintenance expense — all of which can be avoided with Jones Adapta-Plug and Fulbar Shell Fillings with patented Nowave design.


TYPICAL BAR COMBINATIONS.
MIDDLE SECTION WEARS UNEVENLY SINCE ALTERNATE BARS ARE NOT BEVELLED.
80
80
60
40
40
THIS SIDE OF LINE — MORE PLUG METAL THAN SHELL, THEREFORE SHELL WEARS FASTEST.
THIS SIDE OF LINE — MORE SHELL METAL THAN PLUG, THEREFORE PLUG WEARS FASTEST.

E. D. JONES CORPORATION

Pittsfield, Massachusetts

Member of the Beloit Group

ESTABLISHED 1845 PAPER MAKING Jones MACHINERY

Jones equipment is sold in Canada by *The Alexander Fleck, Ltd.*, Ottawa • Overseas Export Agents: *Castle & Overton, Inc.*, New York 20, N. Y. • Foreign Licensees: France — *Batignolles-Chatillon* • Italy — *de Bartolomeis* • Spain — *Gabilondo* • Japan — *Mitsubishi Heavy Industries.*

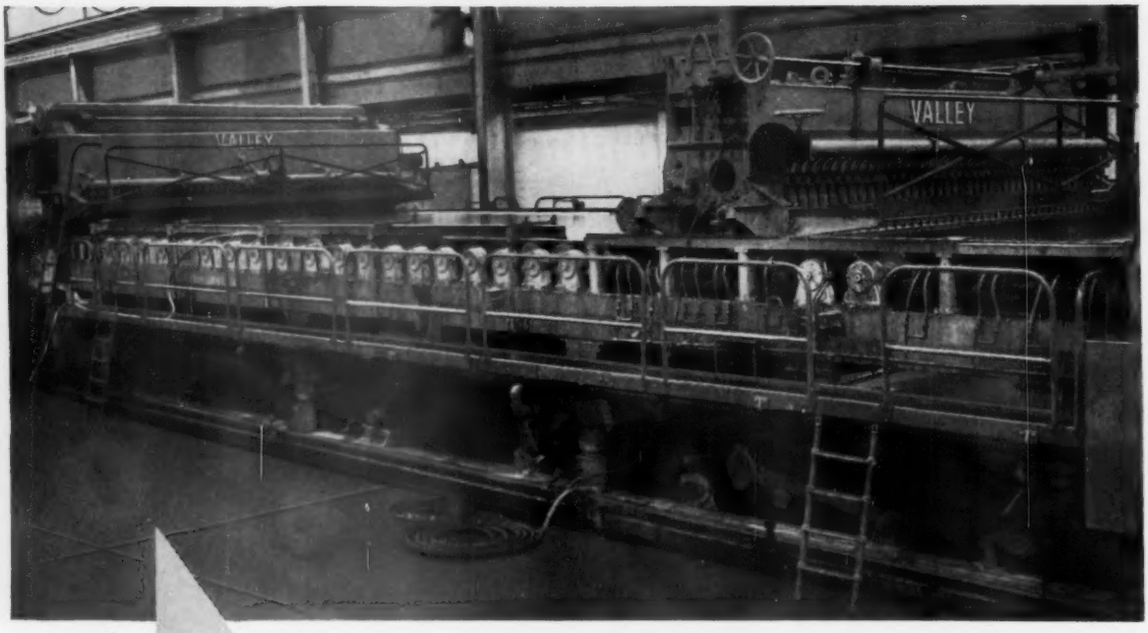
Another

PRIMARY AND SECONDARY HEADBOX

by... **VALLEY** *installed on the 262" paper machine at...*

GEORGIA-PACIFIC

PAPER COMPANY Toledo, Oregon



Consult... **VALLEY IRON WORKS COMPANY**
APPLETON, WISCONSIN

There's only ONE

TARSET®

Coal Tar-Epoxy Resin Coating

IF you're confused by the number of coal tar-epoxy resin coatings on the market today, perhaps these few brief facts will clear the air:

1. Pitt Chem TARSET is the *first* patented coal tar-epoxy resin coating on the market.

2. No other coal tar-epoxy resin coating duplicates the exclusive TARSET formula. It has not been made available to anyone else.

3. Only TARSET coal tar-epoxy resin coating is backed by a *five year* record of outstanding performance in the field.

Do *you* have an unusual corrosion problem in the marine, chemical, petroleum, pulp and paper, water and sewage, or general plant maintenance field? Then you should know more about the revolutionary ability of TARSET to stop corrosion where most other practical methods fail. And to do it at relatively low cost. *Call your industrial distributor for more information . . . today!*

PITT CHEM Industrial Coatings are available through leading Industrial Distributors. See the "Yellow Pages."

★ PITT CHEM "Tarmastic"® Coal Tar Coatings
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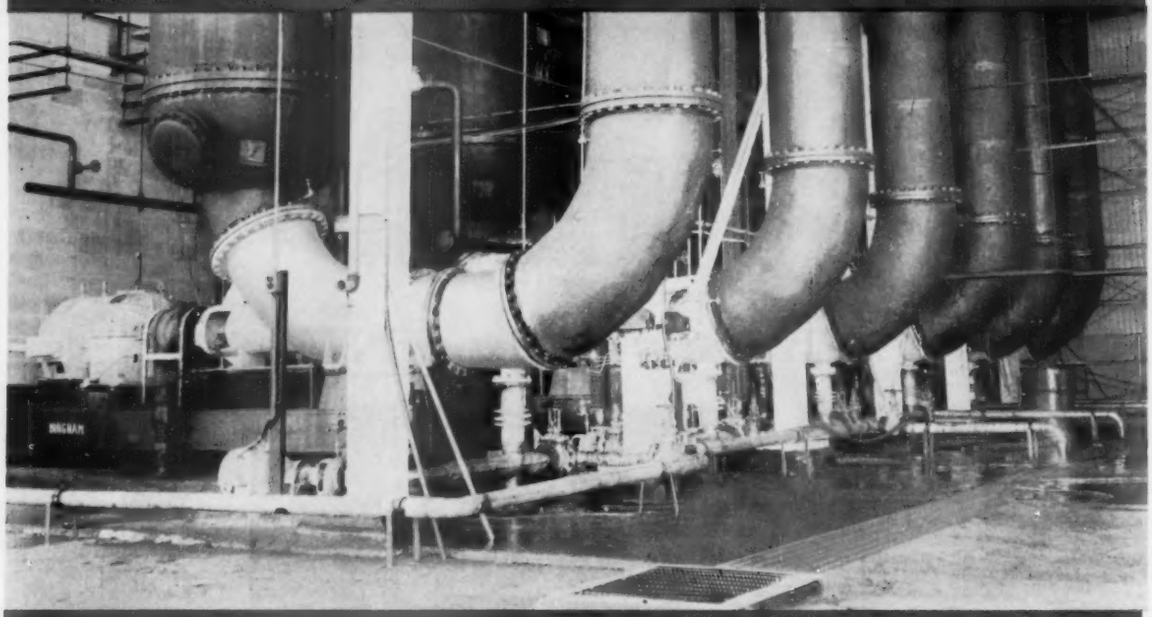
★ PITT CHEM "Tarset" Coal Tar-Epoxy Coatings

PROTECTIVE COATINGS • COAL CHEMICALS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON • FERROMANGANESE

Bingham

"HI-LOW" CIRCULATING PUMP

SPECIALLY DESIGNED FOR EVAPORATOR SERVICE

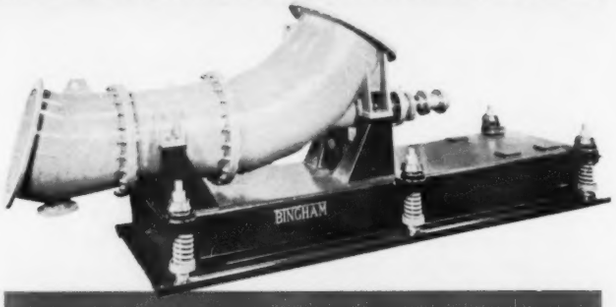


BINGHAM "HI-LOW" pumps with "FLOATING BASES" operating with evaporators, Weyerhaeuser Pulp Mill at Cosmopolis, Wash.

The minimum suction requirement of the Bingham "HI-LOW" Pump (NPSH) reduces the height of evaporators to a minimum with corresponding reduction in structural costs.

The BINGHAM "HI-LOW" PUMP is supplied with a special "FLOATING BASE", which eliminates excessive pipe strains on the pump case caused by temperature changes in operation. The "FLOATING BASE" also reduces foundation loading and eliminates the need for expensive and troublesome expansion joints.

The Bingham "HI-LOW" pump may be used to handle any fluid through evaporators or similar process—primarily designed for chemical recovery systems, may also be used for hot stock, white water transfer, waste liquor, sewage, etc.



Bingham "HI-LOW" pump with "FLOATING BASE"

Bingham SINCE 1921

DOUBLE VOLUTE PUMPS RADIAL BALANCE

BINGHAM PUMP COMPANY

General Offices: **2800 N. W. Front Avenue, Portland 10, Oregon**

Factories: **Portland, Ore. • Vancouver, B. C., Canada**

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AT ALBANY FELT COMPANY

research begins in your mill

1 *An Albany Felt sales engineer helps a customer get to the root of a basic problem.*

2 *In Albany's chemical research laboratory, Harold Hedberg, VP/Research and Development, inaugurates work on a project brought in from the field. In addition to this research center, Albany Felt Company maintains an advanced mechanical research laboratory, research facilities at St. Stephen, S.C., North Monmouth, Me., and Cowansville, Quebec, and a fellowship at a world renowned research institute.*

3 *End result of applied research—fast, trouble-free performance!*

It's at the paper mill that felt research pays off.

It begins with the Albany Felt sales or service engineer who consults with you and then relays the facts to our team of experienced designers and laboratory specialists.

This is the team that first discovered and developed the use of synthetics and chemical treatments which solve many of your critical felt problems. Working on your present requirements, they can help achieve fast, trouble-free performance.

Remember—the felts, treatments and techniques that will break tomorrow's production records are now passing their final tests "under wraps" in our testing laboratories.

Call in your Albany Felt sales engineer. Let him *show* you how Albany's research team can help you get more tons per day—more days per felt.

ALBANY FELT COMPANY
MAIN OFFICE & PLANT: ALBANY, N.Y.
OTHER PLANTS: HOOSICK FALLS, N.Y., N. MONMOUTH, ME., ST. STEPHEN, S.C.; COWANSVILLE, P.Q.

NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS

A SKILLED HAND IN CHEMISTRY...AT WORK FOR YOU

Nopco Paper Chemicals
plus Nopco Service

ASSURE SUPERIOR PAPER PRODUCTS

From the Nopco® line of paper chemicals come the agents that make good paper better.

From the Nopco research laboratories come the know-how and techniques amassed in more than 50 years of service to the paper industry—knowledge and facilities that are always available to you to help meet your special requirements.

Write today for complete information about Nopco paper chemicals, plus Nopco research facilities, available to you. You will find it profitable.

NOPCO CHEMICAL COMPANY
60 PARK PLACE • NEWARK, N.J.

NOPCO®

VITAL INGREDIENTS FOR VITAL INDUSTRIES
Harrison, N.J. • Richmond, Calif.
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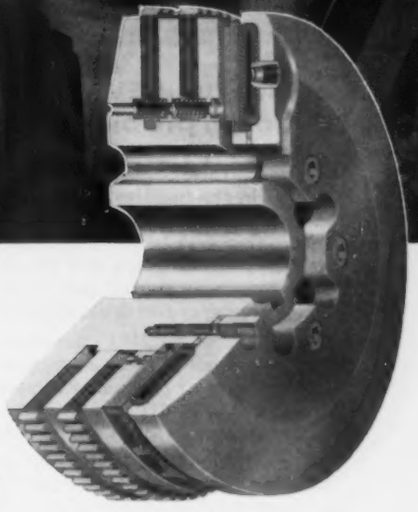
Wichita Clutches also chosen by Fleming & Sons, Inc. to lower maintenance on this calender drive . . . arrows point to cutter drive clutches



Fleming & Sons, Inc., paper manufacturers in Dallas, Texas, have installed several Wichita Clutches and Brakes as a part of an intensive modernization program to reduce maintenance costs. The Wichita equipment is proving dependable according to plant engineer, Walter Alderfer.

If you are having a clutching or braking problem, it will pay you to call in a Wichita Engineer to work out a profitable solution.

WICHITA Clutch COMPANY, INC.
WICHITA FALLS, TEXAS, U.S.A.

Contact your nearest Wichita Engineer today!

Brehm-Lahner, Inc., Detroit, Michigan
L. H. Fremont, Cincinnati, Ohio
W. G. Kerr Company, Pittsburgh, Pa.
Smith-Keser & Co., Avon, Conn., Philadelphia 44, Pa., & New York, N. Y.
Frank W. Yarline Co., Chicago, Illinois
Larry W. McDowell, Long Beach, Cal.
Andrew T. Lobel, Denver, Colorado
Robert R. King Co., Cleveland, Ohio
Norman Williams, Houston, Texas
Allied Transmission Equipment Co., Kansas City 8, Missouri
Donald E. Harman, Dallas, Texas
C. Arthur Weaver, Richmond, Va.
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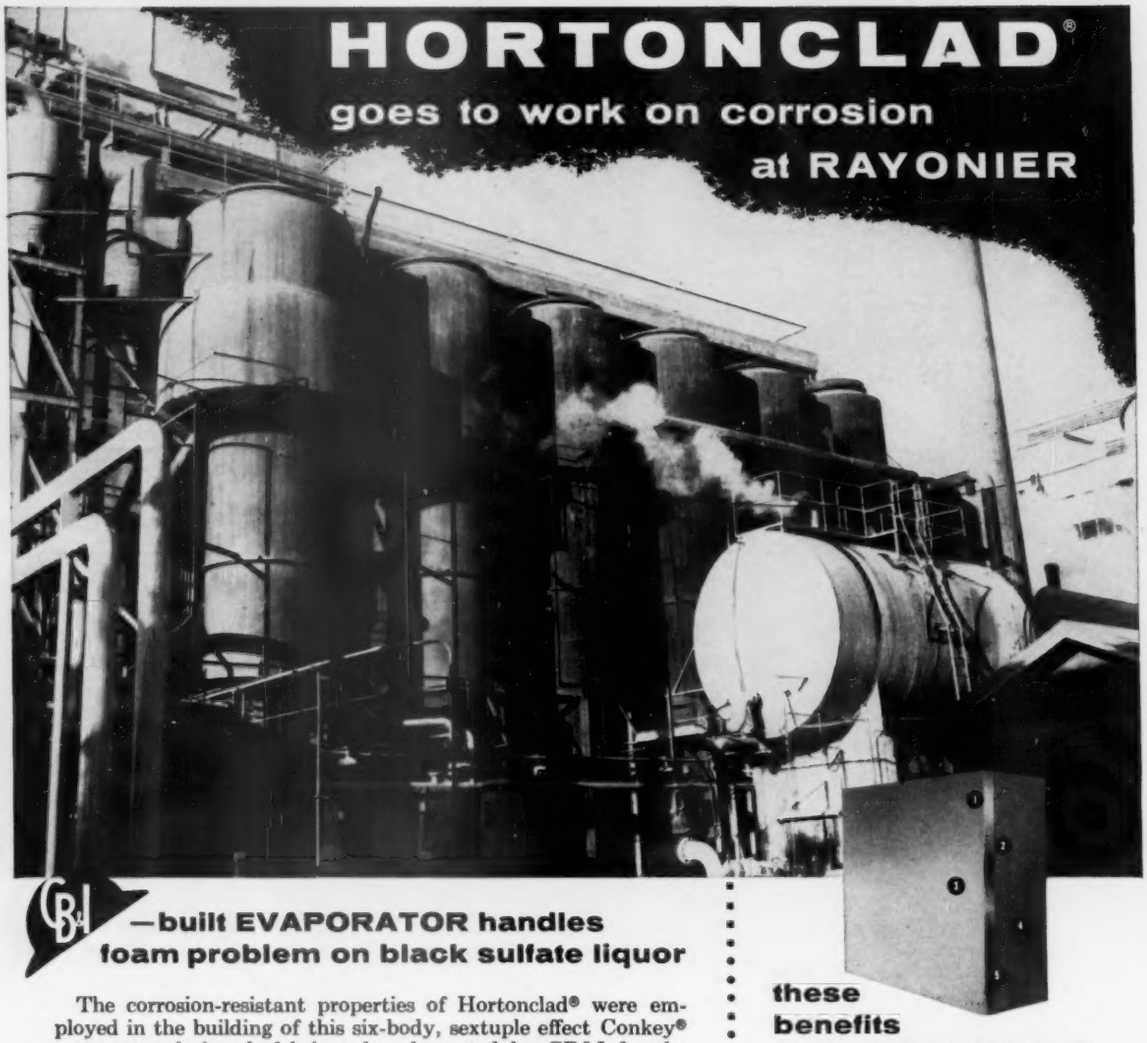
Dominion Power Press Equipment, Ltd. Burlington, Ontario, Canada
R. E. Kunz, Seattle 4, Wash.
Norman Rupp Co., Portland 4, Ore.
Bates Sales Co., St. Louis 1, Mo.

HORTONCLAD®
goes to work on corrosion at RAYONIER



CB&I—built EVAPORATOR handles foam problem on black sulfate liquor

The corrosion-resistant properties of Hortonclad® were employed in the building of this six-body, sextuple effect Conkey® evaporator designed, fabricated and erected by CB&I for the Jesup, Georgia plant of Rayonier, Inc. Stainless steel Hortonclad was used for the No. 1 and No. 2 body, where protection from a high foaming type of sulfate black liquor was most needed. Structures were furnished through Ebasco Services, Inc.

Hortonclad, a CB&I composite metal having an integral and continuous bond, is an example of how CB&I's continuing program of *applied metallurgy* in steel plate construction is helping *us*—to help industry leaders attain better and longer performance life from storage and process vessels.

Write your nearest CB&I office for a copy of a bulletin which describes the extensive *co-ordinated* services and equipment which we furnish for the paper and pulp mill industry.

these benefits with HORTONCLAD

1. Uniform Thickness
2. High Strength Bond
3. Clean, Contaminant-Free Surface
4. Adaptability to Any Size or Shape
5. Special Combinations of Metals

Photo above: Compact unitized, "out-of-door" construction such as this, is typical of the way CB&I-built Conkey evaporators help insure low installation and erection costs and maximum use of space.

CB&I-built Conkey equipment includes:
Crystallizers • Evaporators • Filters

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston • Kansas City (Mo.)
New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • South Pasadena • Tulsa
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, GREENVILLE, PA. and at NEW CASTLE, DELAWARE.

PP27

Acorn of the Eastern Red Oak

Best seller...1989

This acorn may grow to be a tree which will be the source of paper for a best-selling book. It is likely that the paper will bleach whiter, and *stay* whiter—thanks to hydrogen peroxide from Shell Chemical.

In chip-groundwood pulp bleaching, hydrogen peroxide gives high brightness plus markedly increased reversion resistance. For, unlike other bleaches, the *higher* you bleach with hydrogen peroxide, the *greater* the resistance to reversion.

Other Shell chemicals, listed in the column at the right, help the paper and packaging industries produce better products that build lasting customer satisfaction.

The Shell Chemical Technical Service Laboratory—one of the nation's best equipped—will gladly help you solve your paper problems, from pulping to conversion. For prompt assistance, samples or technical literature, write to your nearest Shell Chemical district office.

- Epon® Resins
- Ethyl Alcohol
- Glycerine
- Hydrogen Peroxide
- Ionol® CP
- Isopropyl Alcohol
- Methyl Ethyl Ketone
- Methyl Isobutyl Ketone
- Urea

SHELL CHEMICAL CORPORATION
INDUSTRIAL CHEMICALS DIVISION

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SHELL

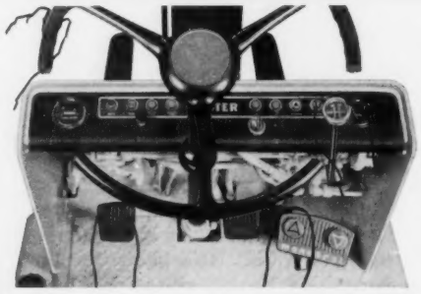
HYSTER ANNOUNCES THE ALL-NEW

SpaceSaver 30 40 50

with monotrol

...the exclusive Hyster control system that sets a new standard for lift truck safety and performance.

NEW from the big cushion tires to the top of the rugged upright, Hyster SPACESAVER 30-40-50 (3000, 4000, 5000 lbs. capacity) Trucks *lift faster* and *maneuver quicker and easier* than any other trucks in their class. "Human engineered" by Henry Dreyfuss, industrial designer, for safety and operator efficiency.



The revolutionary MONOTROL system for the first time eliminates unnecessary and unnatural driver motions. Forward-reverse and speed are *right* foot controlled by Monotrol pedal. Driver's hands are free for full-time steering and load control. Automatic parking brake is push-button controlled. Precision inching control with *left* foot pedal.

See the new SpaceSaver Trucks with Monotrol in action at the Material Handling Show CLEVELAND— June 9-12

Write to

HYSTER COMPANY, P. O. Box 847, Danville, Illinois

HYSTER®

INDUSTRIAL TRUCK DIVISION

MOVING AHEAD WITH INDUSTRY

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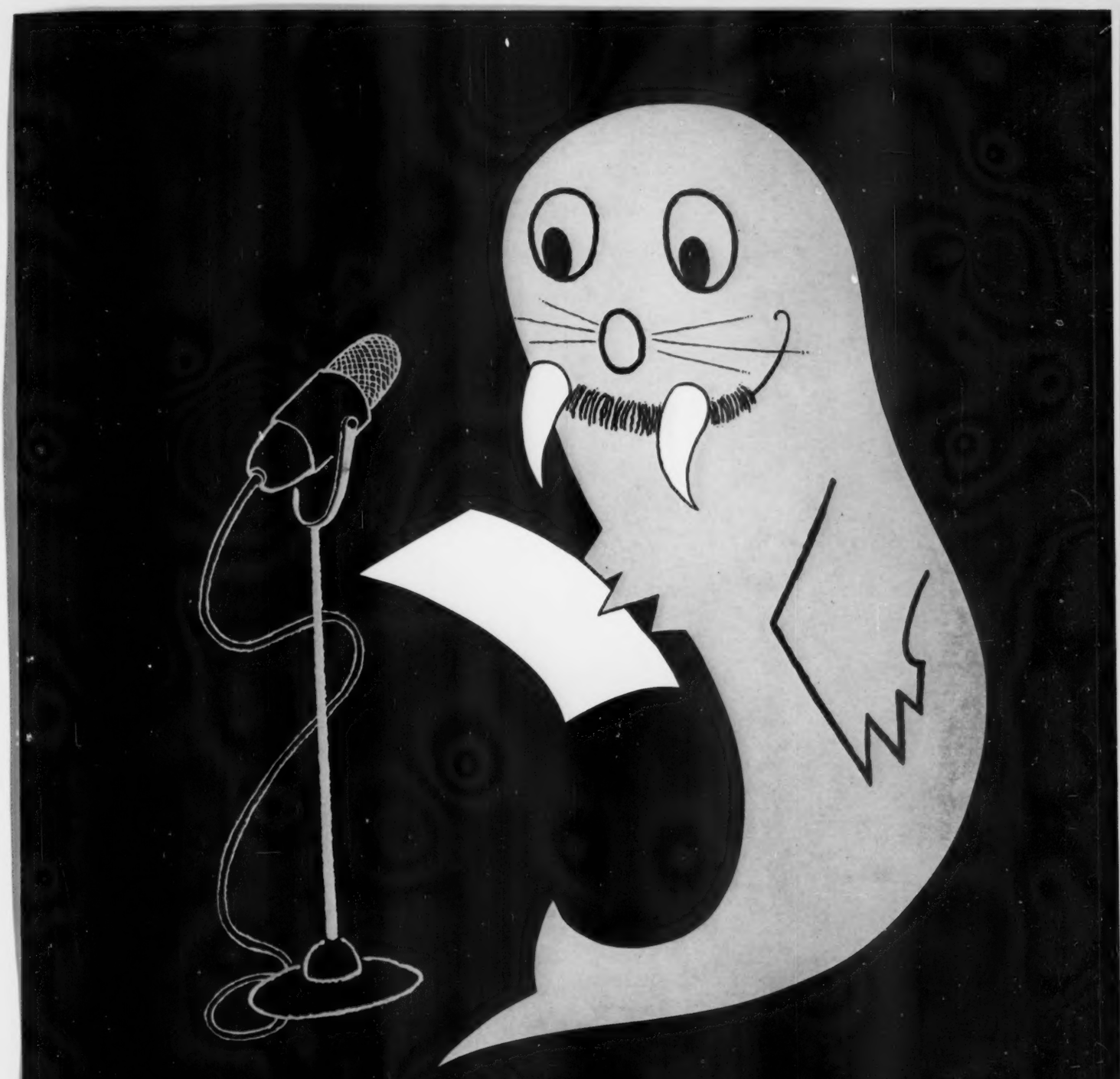

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Current Situation in Europe

- The outlook is good
- Common Market will spur boom
- Goal is fiber self-sufficiency
- But pulp imports will rise
- New fiber sources studied
- Poplar use in Italy, Germany
- Industry expansion continues
- Supermarkets boost paper use

By ALBERT W. WILSON
Editor, PULP & PAPER and
PULP & PAPER INTERNATIONAL

Köln

• Almost every business day for one long month, I have had the rare privilege of discussing the current situation of the pulp and paper industry in Europe with a president or a general manager of a leading pulp or paper company in France, Spain, Italy, Switzerland, and now, as this is written, in Germany. Only one-third of a three-months trip to twelve European countries has been completed but it is possible to assert at this moment that probably nowhere else in the world is the outlook for the industry brighter than in Western Europe.

It does not take a prophet to foresee great expansion in the next several years in pulp and paper consumption on the European continent. The consumption of paper per capita in these countries is less than one-third of that in the United States. But it is plain to see that following the pattern of paper consumption in the United States—Europe is just about 15 to 25 years behind in usage of paper, depending on grades and qualities—it inevitably will develop the varied markets which are now enjoyed in America by the industry of that continent.

There's no doubt that the inflationary pressures are now under control in Europe. A reduction of the discount rate by the Bank of France to 4% has been a stimulus to a business which was already improving.

Occasionally, I have heard complaints about business in the industry, but actually no one is really being hurt and no one was seriously hurt by the European recession, which followed in the wake of the one in the United States. Truthfully, this was not a recession at all, but only a very slight slow-down. There are problems—France is draining money in Algeria; the European countries are finding it hard to do business in Africa, because of the independence movements and the unrest, and they have also lost markets in the Near East and the Far East. But in all these countries, they can now look homeward for their brightest future.

Common Market Will Aid Trade

Nearly all leaders I talked with are confident of solving the problems of the Common Market and even of the proposed Free Trade Area, which would really create a United States of Europe by bringing in the 11 remaining nations of the Organization for European Economic Cooperation. Next January, when the second reduction in tariffs comes into effect for the Common Market nations, it will definitely be felt and will stimulate trade in these member countries.

Most of the leaders I talked with—either in their offices or in their clubs or favorite restaurants, believe that some sort of unity, if not the Free Trade Area as presently conceived, must be achieved for the nations outside of the six partners in the Common Market. They point out that France, Germany and Italy, particularly, sell automobiles and other products to Sweden, Norway and Finland, and they are confident that cleavage in Europe because of the Common Market is impossible to imagine.

I was told repeatedly that these countries want friendship and trade with the Scandinavian countries and with England, but there is a great deal of strong opinion for some sort of protection. It is probable that certain products may be imported on some sort of liberalization agreement. At any rate, the nations involved are working on a plan to bring together all of the countries of Europe in some sort of an economic agreement in which no one will suffer. Most of the industrial leaders are confident this will be achieved.

With the present over-supply of market woodpulp in Europe and the recent reduction in price, it is difficult, perhaps, to conceive of a situation which will be completely the reverse. However, experienced observers in these countries foresee this situation coming very rapidly and probably more rapidly than many are aware. There have been reductions in pulp prices in Europe. Limited amounts of Russian pulp have been sold on the market at lower prices which, while even in low quantities, have had an effect.

Goal Is Fiber Self-Sufficiency

In Italy, the heads of one of the biggest paper companies in Europe told this writer that they are "fighting" to establish domestic resources of wood for their pulp. Italy has accomplished wonders already in growing poplar for groundwood pulp. Great areas have been planted and some of the harvests have ranged from six to nine cords per acre.

Germany, likewise, has been exceptionally successful in spreading the development of poplar resources among private land owners and also the state and city owners of timberlands. In Germany they are emphasizing semi-groundwood, while in Italy both chemi-pulp and mechanical

pulping of poplar are the methods used.

In France there are two new market-pulp mills. One is a softwood kraft mill, Cellulose du Rhone, built by the Franck interests; and the other is Cellulose d'Aquitaine, a hardwood kraft mill in the lower Pyrenees. Both of these mills are anticipating a larger field of operations in the Common Market.

In Spain, private interests and the government are planning four new mills, using the pines, which grow rapidly in the northeast coast, and also bagasse and eucalyptus in the south.

Switzerland has only one important market pulp mill, Attisholz, which has long term contracts to assure its future.

But despite all these efforts to establish their own industries, these countries must look abroad for their future pulp. The woodpulp requirements of these continental countries which I have visited are expected to increase by several million tons in the next five years or so.

In France I visited with such industry leaders as Stanislas Darblay, head of Papeterie Darblay; André Lourdelet, head of the Lourdelet-Maricot mills, just before he left for a vacation cruise to Martinique; Jean Avot, director-general of Papeterie de la Seine; Gerard Escarfail, whose mill is near Grenoble, home of one of the great pulp and paper schools of this industry—now over 50 years old. These, and many others—including the executives of all the associations in France—were optimistic about the future.

It would be a mistake to consider that the industry leaders in France are all of one mind. There are two rival organizations: (1) CIP, which includes the great majority of mills and is protective in its outlook—although looking for great things to happen under the Common Market regime; and (2) UNIPAK, which includes some of the larger mills in the country and is in favor of free trade in pulp. It still has not won its point, however, as there is a duty on imported pulp.

France will probably have enough newsprint production for a long time to come with two new machines in the mill of Société F. Beghin & Cie near Belgium, and Papeteries de Chapelle, near Rouen. Other large mills in France are the Sonopa mills in Rouen, which makes mostly news, and Papeterie de la Seine, at Nanterre, near Paris, where five machines make a variety of grades. This mill, visited by the writer, makes 85,000 tons a year for sales of over ten million francs.

Paper Pushes into New Fields

While in Paris, I also called on the headquarters of the OEEC, lodged in a huge and luxurious mansion of the Rothschild family near the Trocadero. The pulp and paper section of OEEC is looking forward to a 50% increase in paper consumption and production in these countries by 1965. At least three new mills are projected in France and many other companies are planning improvements. There is some kraft pulp being sold by the mills in the southwest, near Bordeaux. The sulfite mills in the northeast also occasionally have pulp for sale. But the needs in France are expected to rapidly increase.

Kimberly-Clark has acquired a mill on the Brittany coast at Quimper and this may presage a greater use of tissues and expansion of products for which this company is world-famed, duplicating the history of such expansion in other countries. At any rate, this writer observed that when the petit déjeuner (breakfast trays) are brought to the room in hotels now, in many cases the napkins are tissue, and not linen.

The supermarket, or self-service store, which will require packaging of products in paper, is rapidly coming into its own in these European countries. There are several of them now in Italy. In Switzerland, one company has opened a number of such supermarkets. I heard much despair expressed about ever putting a European bread roll in a wrap of paper, but even this may be in store for the future. In Germany, paper containers for milk are being produced.

Spain Rides Expansion Wave

In Spain, imports are described as virtually impossible. There is certainly plenty of Spanish money, but it is difficult to get foreign currency. In fact, it is almost impossible under present government policy. Prices are still high and though production has fallen off, imports of pulp probably will be needed in order to expand this country's paper industry.

Spain was literally a forest some centuries ago but it was heavily cut during the growth of the nation as a world empire. However, there are areas where species such as pine will grow exceptionally well, and the northeast is described as one of the most prolific producers of fiber in the world. Here is where pine thrives.

The biggest paper company in Spain is La Papelera Española, now producing about one-third of the nation's requirements. It is planning expansion in newsprint. I visited here with Don Sr. Antonio de Sabates, general manager of this company, and his right hand man, the assistant director general, Rafael Chapa Galindez. They were very confident of the steady future growth of the industry in their country.

Perhaps the biggest single mill in Spain is Sniace, which makes about 400,000 tons a year of paper and dissolving pulp. The Spanish government is planning three new mills, one in the northeast near the Portuguese border, another near Malaga, and

Wilson Tschudin

Friendly Encounter in Switzerland

Editor Albert W. Wilson meets Dr. Fritz Tschudin, world renowned historian of the pulp and paper industry, at his home in Riehen, suburb of Basel, Switzerland. Dr. Tschudin is creator of the Paper Museum in Basel. His research has uncovered much information on ancient or Middle Age papermaking methods in many countries all over the world. He will write about his discoveries for this magazine.

another near Cadiz. A private company is also planning a new mill.

It is probable that in future years many of the 300 mills in Spain will disappear—these being the small ones—and production will be concentrated in larger mills. Production was about 300,000 tons in 1958.

Spain is looking forward in September to a tour by ATIP, the technical association of France. This association, however, is one of the most international of its kind in the industry—with 170 members outside of France. It is "the" association for the Spanish as well as the Belgian papermakers and has members in other countries.

Italy Looks for Better Fibers

In Siena, Italy, a meeting was recently held to encourage the utilization of small woods of many species. French and Italian pulp and paper technologists, 240 strong, attended this meeting. There is a great deal of 2 to 12 in. diameter hardwood in both countries which is hoped will be found useful. Montecatini, a big Italian company in the mining and chemical and rubber industries, even bigger than Fiat and perhaps Italy's biggest, is going to do some pioneering in this field with a new plant which will develop some products from the species.

There are over 50 members of the American TAPPI in Italy and they are now holding regular meetings and working hard to improve standards and widen the resources of their industry.

Several new mills are presently being built, or are just completed in Italy, and in four cases the government directly or indirectly paid the bill. Cartiere Avezzano, in Abruzzi, is one of the important ones. This will be running late this summer or early fall. Another at Chieti, is already in production and one at Tirnavo. Another at Trieste is indirectly supported by the government. Some private industry executives have expressed concern to the writer over the government ventures in Italy—but others were not the least bit alarmed and took the viewpoint that the government mills to succeed, must survive strong competition from the private industries.

Italy grows about 95% of its resources of groundwood, but only about 5% to 10% of its chemical pulp. Cartiere Burgo, the largest company in Italy, is now making an intensive study of a white pine species, pinus strobus, which it may develop into an important source of fiber supply in the next 20 or 30 years. This is a company which did much of the pioneering in extension of poplar growth in Italy, selecting the best species from 1000 different kinds, and assisting in the planting of thousands of acres of poplar. If it repeats this success with pine, it will be an important aid to Italian production.

There are two management associations in Italy, one in the central and southern area, with headquarters in Rome; and one in Milan, for the northern mills. However, three of the largest companies in the country do not belong to either association. Working conditions are different for different mills and different areas and this is primarily the reason for the separation of the two associations and the independent activities of the larger mills.

Another mill is projected in Sicily, which expects to use eucalyptus. This has not advanced far enough to be considered a certainty, however, and there are some authorities in Italy who believe the eucalyptus is not as suitable to this country as it is to some others where it has been very successful for papermaking.

Switzerland Doing Fine

In Switzerland, some 25 pulp and paper mills are enjoying good business and coming out of their very slight slump. In fact, new machines are being built for three important companies. (1) Papierfabrik Cham, near Zurich; (2) Papierfabrik Perlen, near Lucerne; and (3) a machine for Papierfabrik Balsthal, at Solothurn, which will be the second within three years for this mill. Only a few months ago it started up a new tissue machine.

West Germany Expanding

In West Germany, the writer met with Dr. Friedrich Dorn, president of Zellstofffabrik Waldhof, a major pulp and paper company of the country, and with Dr. Herbert Rohrer, who is chairman of the managing board of Feldmühle Papier- und Zellstoffwerke AG, which is one of the biggest nonintegrated paper industries in all of Europe. I also visited another important pulp producer, as well as paper producer, the Aschaffenburger Zellstoffwerke, which likewise has several mills.

Aschaffenburger and Waldhof are sulfite pulp producers. The production of sulfate pulp is not allowed in West Germany, due apparently to the pressures of the tourist business in that area. These mills make sulfite pulp and also some semi-chemical. The Munich, Dachau and Augsburg companies in the southeast are important newsprint producers, and one of the Feldmühle mills is an important newsprint mill. These mills have been increasing their production. Several new machines have been installed or are to be installed in West Germany.

Gustav Adolph Schütze, president of the German Poplar Association, told this writer a remarkable story of how this poplar culture has increased. Average plantings are 4 to 5½ million of 2½ year old trees every year. He predicts that the annual poplar harvest will increase from 200,000 cubic meters to over 700,000 cu.m. in 10 years, sufficient for 100,000 tons of pulp production. However, it must be remembered that this compares 1,300,000 cu.m. annual cut at the present time in Italy, and 2,200,000 cu.m. in France each year.

In Germany work has been carried on for only about five years and pedigrees of the best poplars have been established and other control methods established. Germany consumes about 6,000,000 cu.m. of wood per year, and in the past few years has started to use more and more wood from sawmill waste. This now totals 700,000 cu.m. Over 40% of the wood manufactured into pulp in Germany must be imported.

Pulp Imports Will Rise

This is a serious problem for other continental European countries as well. A great many of them are importing wood from Russia and Finland and Yugoslavia. They will admit that this is not a healthy condition and that they cannot look forward to an economic continuation of wood imports even at these distances, as the producing countries go into greater pulp and paper production. It will mean that in the future there will be more pulp imports, rather than wood imports in these countries.

German paper and paperboard production increased remarkably in recent years and in 1958 was well over 3,000,000 tons. Per capita consumption is over 140 lbs. per person. This is substantially higher than France and almost three times the per capita consumption in Italy. It is probable that new paper uses and wider markets for paper may be expected to develop in Germany a little faster than in some of the other European countries.

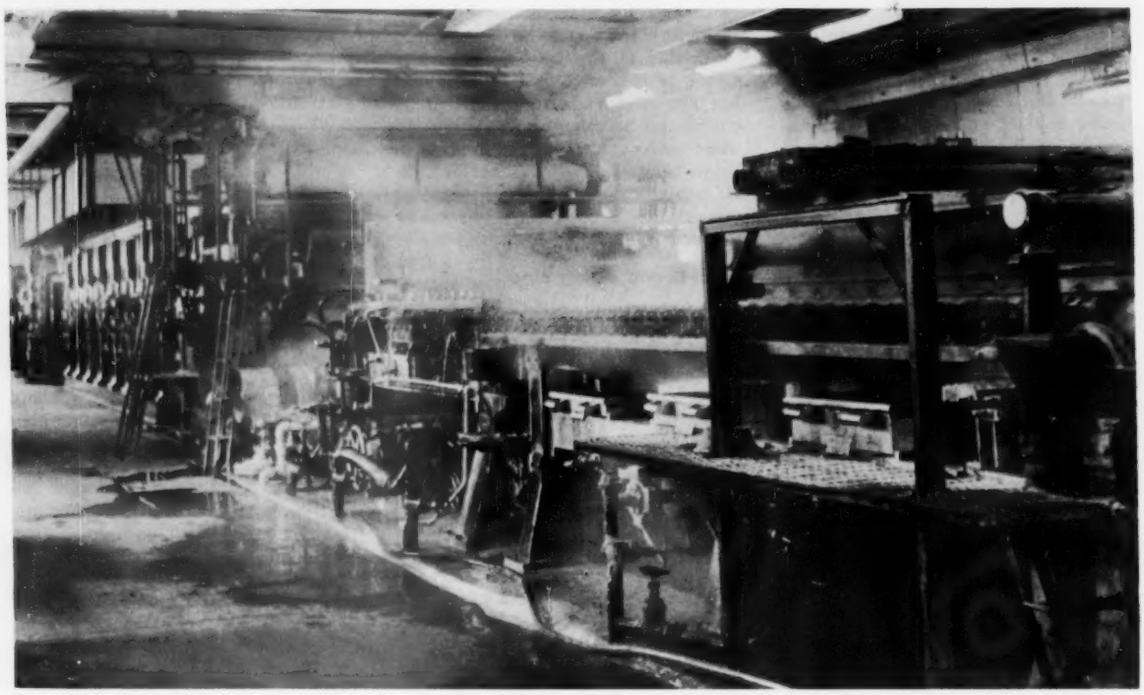
On my trip to date, I have been in three large paper machine manufacturing plants in Germany and Italy. In each case I saw two substantial paper machines almost completely assembled on the floor in each plant. In one case, the machines were for Switzerland and Japan. In another, they were for Taiwan and Korea. A Yugoslavian commission of 20 experts recently came to Germany to order three new paper machines. The German manufacturers are building machines for as far away as India and Mexico. They have established construction facilities in Brazil and elsewhere.

The Crane Story

PROBLEM: To replace old machine with new, in minimum downtime.

SOLUTION: Use summer and Sunday shutdowns over three years.

RESULTS: New machine for old with three weeks' lost-time.



TURNING OUT FINE PAPERS is the new No. 1 paper machine (Rice Barton) at Crane & Co.'s Bay State mill. The unit is 105 in. wide, has a 61-ft. wire.

"With Skill and Care . . ."

Since its founding 158 years ago, Crane & Co., Inc. at Dalton, Mass., has produced only 100% rag papers from cotton, linen and flax fibers. Since 1801 its efforts have been directed to the finest papers that man can make.

In a recent visit to Crane's four mills (actually, it has a fifth—Byron Weston Co., acquired in 1956), PULP & PAPER's eastern editor, Maurice Castagne, was especially impressed with:

1. The efficiency with which the Bay State Fourdrinier was renewed and widened with a downtime loss of only two weeks.

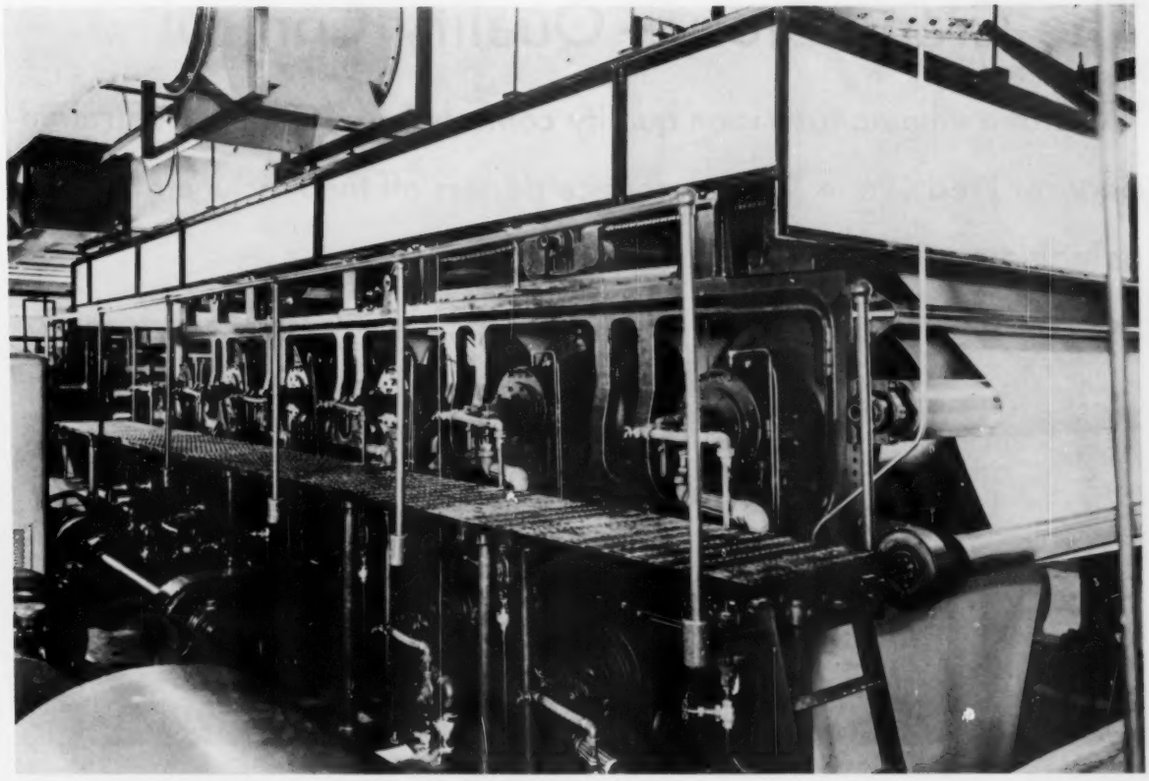
2. The company's intense efforts at quality control.

On these pages are presented some of the highlights of this visit.

● Production-wise, Crane & Co.'s Bay State mill is the largest—20 to 24 tons per day. Its No. 1 paper machine, originally an 80-in. unit built in 1873, has been rebuilt several times. The most recent renewal has resulted in a 105-in. machine. Installation of the new Fourdrinier and other equipment was stretched out over three summer and many Sunday shutdowns.

In the first year new chests were installed in a new building; the Fourdrinier was added during the second year; and in the third year the first calenders, size press, paper reels and rewinder were placed in operation. Beyond normal shutdowns, only two to three weeks were lost.

The first step—the installation of two new tile stock chests—allowed



CRANE LIKES WORM GEAR DRYER DRIVES, said to be the first such installation of its kind. Reasons: compactness, smoothness and quiet operation.

room for a modern length Fourdrinier. Room was of prime importance. Crane was replacing a small paper machine with a considerably larger one. The wire on new No. 1 measures 61 ft.; 30 ft. from breast to couch.

An important move stressed by quality-conscious Crane was the complete shift to Bauer Bros. Centri-Cleaners and a Shartle Selectifier. The results were excellent, says Gen. Supt. Gilbert D. ("Gib") Kittredge.

Five Air Hammers

There was considerable difficulty removing the old dryer section, which sat on granite soleplates (stone brick arches bolted to granite and leaded in). At one phase of the operation five air hammers were operating simultaneously.

With the machine in full operation, an extension was added to the dry end of the machine room. On one Sunday a wall and roof were removed and—with production continuing—new roof and walls were constructed to house the addition.

Features of New No. 1

- A Rice Barton Fourdrinier 105 in. in width.
- A Black-Clawson suction couch.
- The Rice Barton enclosed dryer drive is equipped with Cleveland worm gear drives—the first such installation. Crane likes the set-up because the worm gear unit takes up much less space than conventional equipment, allows air to circulate from the back as well as the front and permits use of double felt rolls between each dryer roll, thus providing better wrap. In this way the sheet is held on a longer arc. It is vital to Crane that the sheet not be held against the dryers without the felt. This would cause puckering.

In addition, the smaller, enclosed gearing improves safety. The smoothness of power inherent in worm gearing (the result of sliding action between several worm and gear teeth in contact continuously) provides a smooth, steady, even and uninterrupted torque flow resulting in a better product.

"The worm gear," says Mr. Kittredge, "allows you to space your dryer rolls the way you want. There is no need for gear holes. Noise is also a factor, and the worm gear drive is less noisy."

Other favorable features of the drive: Dryer inspection from the drive side is easier, and broke can be removed with ease from either side of the machine.

A Foxboro Dynalog controls moisture in the sheet coming off the dryer section (by measuring the degree of moisture in the sheet) and adds or takes away steam from the dryers accordingly.

An Industrial Nucleonics AccuRay with traversing head has been added for uniform weight control.

A new Cramm dryer drainage system was installed.

See next page for Crane's quality control

Personnel Note

They say a company is known by the people it keeps. More than 25% of Crane's 750 to 800 employes have been with the company 25 years or longer. For instance, in Crane's highly skilled stationery operations—employing some 150 persons—50 have been there for 25 years and the rest 10 to 15 years.

Now in its fifth generation of management by the Crane family, there are also the sixth and seventh generation at work in the mills.

The Crane Story – Quality Control

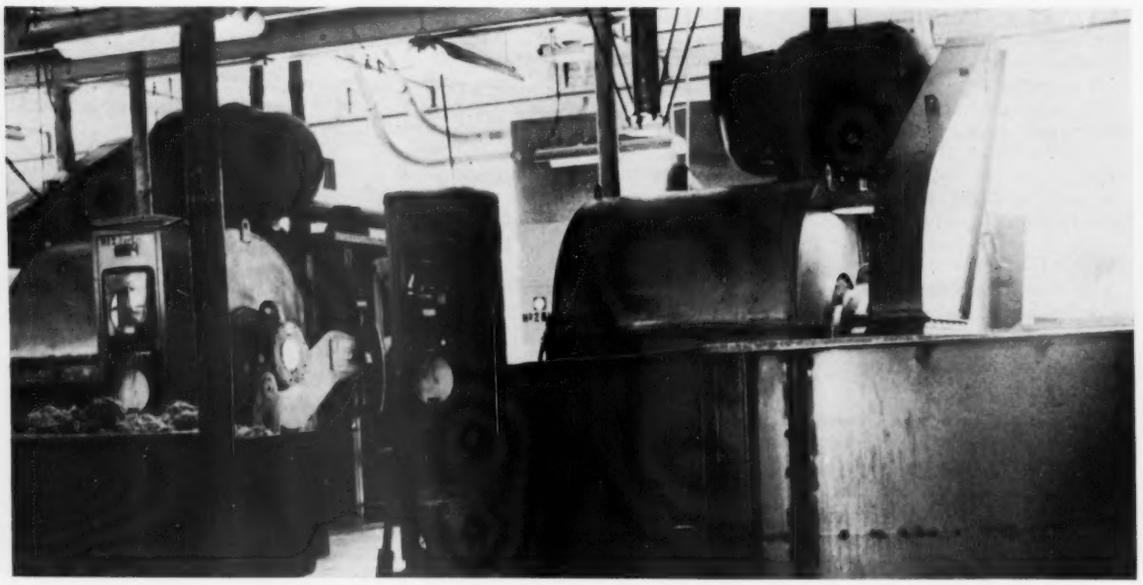
"At Crane all emphasis is on quality control," says Quality Control Supervisor Fred Crane Jr., "to produce papers off the machine of quality as high as we can get from our sorting room."

Raw Fibers

"Our various quality checks start with cotton and linen fibers." The first step in the manufacture of Crane quality papers is the sorting of linen or cotton fibers, or with flax shown here, unbaling and conveying to rotary cookers.

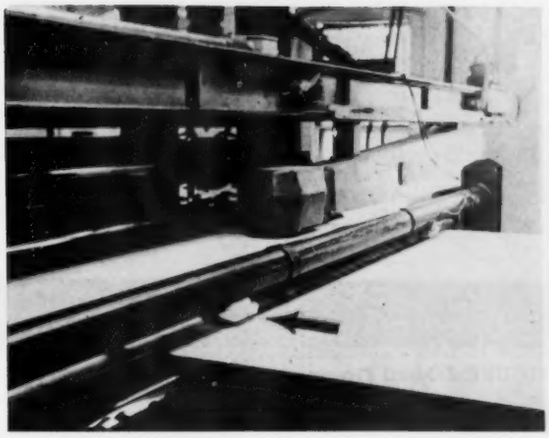
Cooking

Here fibers are cooked for about eight hours, then dumped and scooped up by Frank G. Hough Payloader for removal to draining chests. Half-stock drains for periods of up to three weeks, is then prepared in the beaters.



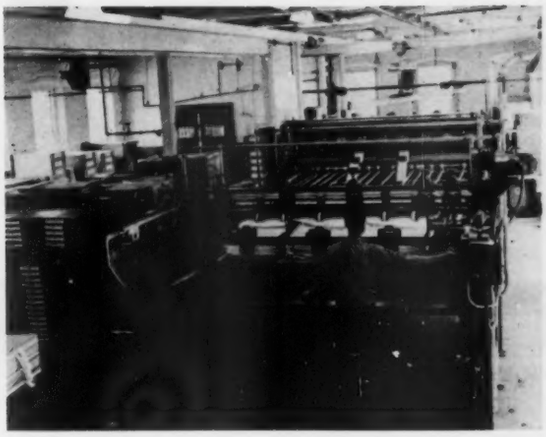
Beating

Strict emphasis is on beating in all Crane operations. Crane uses something like 37 Jones (stainless steel or tiled) beaters in its mills; ten alone are in the Government mill. Stainless beaters shown are in Government mill, where all U.S. currency is made.



Instrumentation

"On the machines we have put moisture gauges, beta gauges, primarily to give us more uniform properties. In addition, we have installed stock cleaning equipment such as Centri-Cleaners and Selectifiers." Shown are Industrial Nucleonics AccuRay traversing unit on new No. 1 machine in Bay State mill and Foxboro Dynalog (arrow).



Sheeting

"We sample extensively every load off the sheeters. In the manufacture of our quality papers it is important that a good sheeting job is done, and the Clark-Aiken cutters fill this bill extremely well. New Clark-Aiken "C" cutter (above) replaces an older model, makes high cutter speeds with accuracy possible."

Sorting

"Naturally, there are some grades of papers such as wedding stock that will always require a special hand sort. But right now we are making a terrific emphasis to get quality in the machine room rather than in sorting", says Fred Crane Jr., whose comments on quality control have been quoted on these pages.

The Mills of Crane & Co.

The mill most intriguing to visitors is the Government mill, where all United States currency is made. Two Fourdriniers produce currency paper at a rate of about 1,500 tons per year. Up until a few years ago, all currency paper used by the U.S. Government was printed by a wet process (that is, the paper was still "wet" when printed). However, the Bureau of Engraving & Printing developed a process to print currency in a dry state, and today a major portion of Crane's currency paper production is dry.

The Old Berkshire Mill produces 4.5- to 10-lb. carbon tissue on its recently rebuilt 96-in. Fourdrinier. Carbon tissue uses a 100% flax furnish; 4.5-lb. stock requires about 20 hours in the beaters. By "isolating" production of this heavily-colored paper, Crane takes no chances with "contamination" of its other paper production. The rebuilt machine now has a new Rice Barton Fourdrinier with a 60-ft. wire.

The three-machine Pioneer mill produces tracing and roll bonds, plus Bond and Crest business letterheads. A central steam plant at Pioneer supplies all millls.

Crane's stationery operation is supervised by Jack Kearney, supt., who has been in the business 56 years. In fact, of the 150 persons employed, 50 have been associated with production of stationery 25 years, while the remainder have been in the field 10 to 15 years.

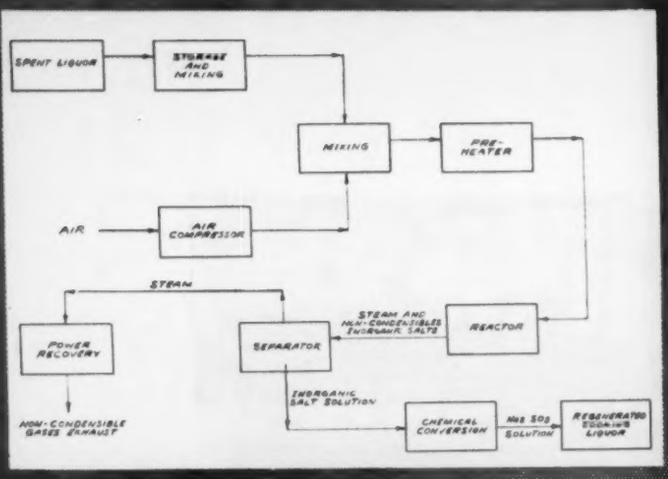


FIGURE 1. Zimmermann Process

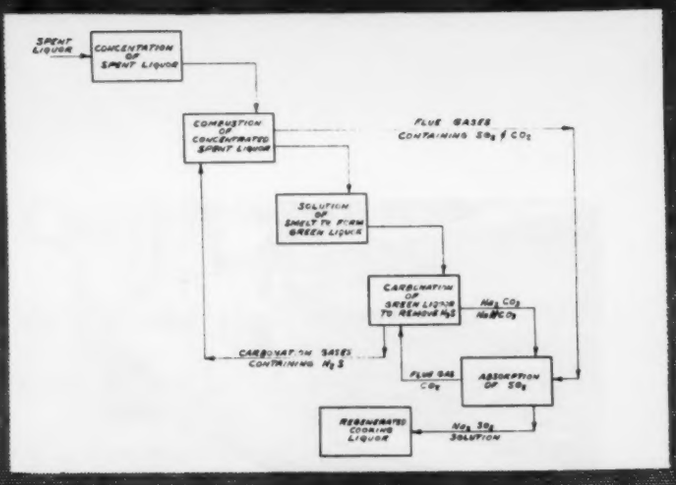


FIGURE 2. Mead Process

Semi-Chemical Recovery

Six processes are competing for the industry's favor. In this article three experts examine the pros and cons of each.

By Dr. RICHARD W. BROWN
Laboratory Director
Dr. DONALD T. JACKSON
Technical Director
Hammermill Paper Co., Erie, Pa.
and
Dr. JOHN C. TONGREN
Technical Director
Watervliet Paper Co.

● All industry—and particularly pulp and paper—has in recent years been giving more and more attention to the problems of stream pollution and pollution abatement. This applies to new installations as well as existing plants and processes. In fact, one of the prime factors in considering any new plant or process is stream pollution, and in many instances this has limited or prevented expansion programs. A typical case in point is the neutral sulfite semi-chemical pulping process.

In the last 15 years the semi-chemical process for producing both bleached and unbleached pulp from hardwoods has grown tremendously. It is one of the most significant pulping developments that has occurred in many years. The successful application of this method of cooking wood has opened vast stands of hardwood heretofore not considered suitable for the production of quality paper pulps.

This article was presented at the annual meeting of members, the National Council for Stream Improvement Inc., Feb. 25, 1959.

One important factor has hindered this growth—the lack of a satisfactory method for treating the spent pulping liquor to prevent stream pollution. The primary problem concerns the spent pulping liquor; in the case of bleached pulp, however, the bleach plant effluents also require treatment.

A suitable treatment method must not only reduce stream pollution but must do so at a cost that does not adversely affect the company's economic position. A recovery process that will recover the cooking chemicals in the effluent is most likely to satisfy these requirements. Research on recovery processes has occupied the attention of many competent engineers and chemists for a number of years. To date, however, no generally satisfactory method has been found. A number of processes are being studied commercially.

Beyond the Laboratory Stage

There are six processes that have progressed beyond laboratory bench study and are in various stages of development. Some are more advanced than others, but all have had sufficient study to indicate their possibilities of success. All the processes are claimed to destroy the organic material that produces stream pollution and recover the cooking chemicals. These are as follows:

1. The Zimmermann process developed by Sterling Drug Co.

Which Process Will Win?

Six processes for chemical recoveries in semi-chemical pulping are competing for favor. The industry is watching closely. Which ones will be accepted?

This is important because it will open the way for greater expansion of the semi-chemical pulping industry and expanded use of hardwood forests, which in many cases are located near old mills and in comparatively heavy population centers. If the semi-chemical pulping pollution problem is licked, these factors will no longer be obstacles, and semi-chemical pulping can be expected to forge ahead.

This article gives a realistic appraisal of the six processes for recovery of chemicals from spent semi-chemical pulping liquors that presently seem to offer the most promise of solving this serious problem.

The authors have been closely associated with this field for many years and have based their comments on the best available technical data.

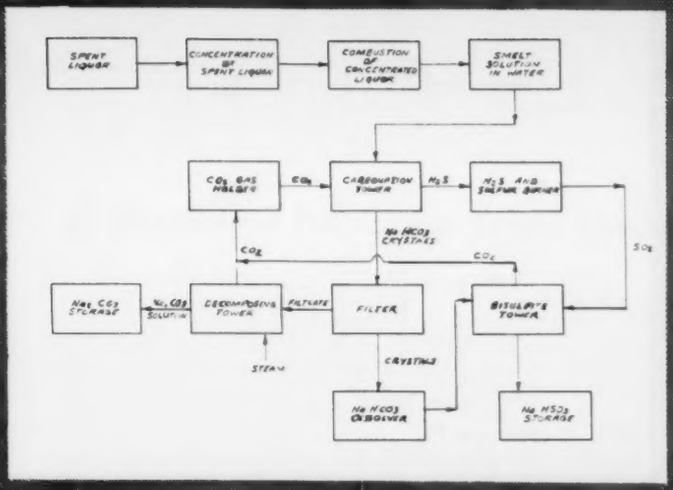


FIGURE 3. Sivola Process

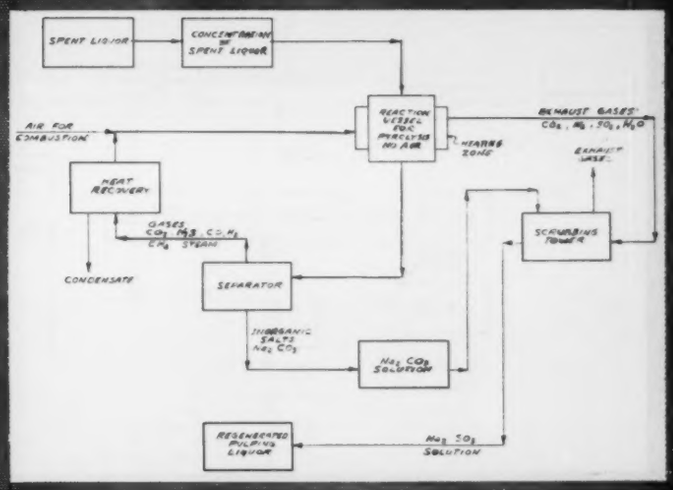


FIGURE 4. Gauvin Process

2. The Mead process developed by the Mead Corp. and promoted by Babcock & Wilcox Co.
3. The Sivola process promoted by Combustion Engineering Inc.
4. The Gauvin atomized suspension technique developed by Dr. W. H. Gauvin at the Pulp & Paper Research Institute of Canada.
5. The Bradley process promoted by Western Precipitation Corp.
6. The Institute process patented by the Institute of Paper Chemistry and installed by Babcock & Wilcox Co.

1. Zimmermann – One of the First

The Zimmermann process has been described previously in detail in a paper presented at a section meeting of the National Council for Stream Improvement Inc. A simplified flow sheet of the process is shown in Fig. 1. A flameless wet combustion is used to convert the pollution-causing organic material in the spent liquor to carbon dioxide and water, leaving a solution of the inorganic salts. The spent liquor mixed with compressed air at temperatures typically of 500°F and 800 psi reacts smoothly when held in a reaction vessel sufficiently long for almost complete combustion.

When oxidation is complete, the steam and non-condensable gases (mainly nitrogen and carbon dioxide) are separated from the solution phase. The energy in the gases is then converted into usable form by passing through suitable gas expansion engines and turbines.

The solution phase contains the sodium sulfur values present in the spent liquor in the form of sodium sulfate. The sodium sulfate is converted chemically into sodium sulfite by treatment with lime and sulfur dioxide. This regenerates the sodium sulfite cooking solution, leaving a residue of calcium sulfate as a waste by-product.

In Sweden a Bold Venture

The Zimmermann process was one of those listed to be tested on a commercial scale. Hammermill Paper Co. operated a 30-ton-a-day unit during 1954 and most of 1955. Currently, a larger Zimmermann plant is being constructed at the Borregaard AB mill in Sarpsborg, Norway. This plant is designed to handle the spent liquor from 500 tons a day of calcium base sulfite pulp. Equipment is being provided to recover the heat value, but no attempt is being made to regenerate any cooking chemicals. Start-up of the plant is scheduled soon.

Currently, Sterling Drug is concentrating its attention on disposal of sewage sludge from municipal sewage treatment plants and has not been active in the pulp and paper field.

The Zimmermann process has many desirable features, but much remains to be learned about it. The wet combustion has been proven to be a technical success. However, as yet the conversion of the sodium sulfate to sodium sulfite has not been proven on a large scale, although it is believed that design of a suitable plant can be worked out. Relatively little is known about recovering the energy present in the steam and non-condensable gases. This is a new and untried field that will require extensive research evaluation before its success or failure will be known.

2. Mead – Too Early for a Clear Picture

The Mead process begins with an evaporation and furnacing operation similar to the recovery furnace operation practiced in the kraft industry. The smelt from the furnace, consisting of sodium sulfide and carbonate, is dissolved and clarified as in the kraft industry.

The key to the recovery operation is to convert the sodium sulfide to sodium sulfite, the desired cooking chemical. The basic flow sheet in the Mead process is given in Fig. 2. A portion of the flue gas from the furnace is passed counter-current to the smelt solution in suitable packed towers. Carbon dioxide is absorbed in the alkaline smelt solution, and hydrogen sulfide is liberated and driven out of solution. The hydrogen sulfide is returned to the furnace, where it is burned to sulfur dioxide. The carbonated solution that is essentially free of sulfide is passed counter-current to the furnace flue gas in another packed tower. The sulfur dioxide contained in the flue gas resulting from the combustion of hydrogen sulfide and the spent liquor is absorbed, forming the desired cooking liquor.

Watervliet: a Pioneer

The first commercial installation of the Mead process was made at Watervliet Paper Co. in Watervliet, Mich. This plant was designed to handle the spent liquor from a 50-ton-per-day semi-chemical pulping plant. The plant has been in operation for approximately a year. A second plant of 200 tons capacity has just recently started up at the Lynchburg, Va. mill of Mead.

The Watervliet plant is now producing recovered pulping liquor of satisfactory quality for the pulp mill. It is too early to have a clear picture of the economics. However, it is believed that the value of the recovered chemical is sufficient to cover the operating cost and the fixed charges. The Watervliet plant is relatively small, and a better picture of the economics may not be obtained until the large

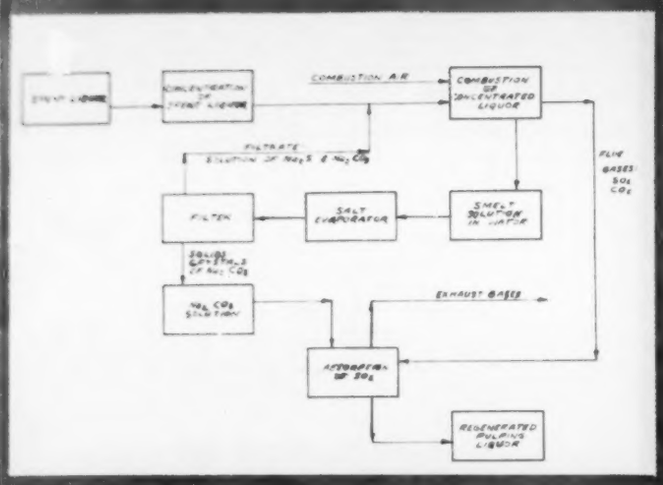


FIGURE 5. Bradley Process

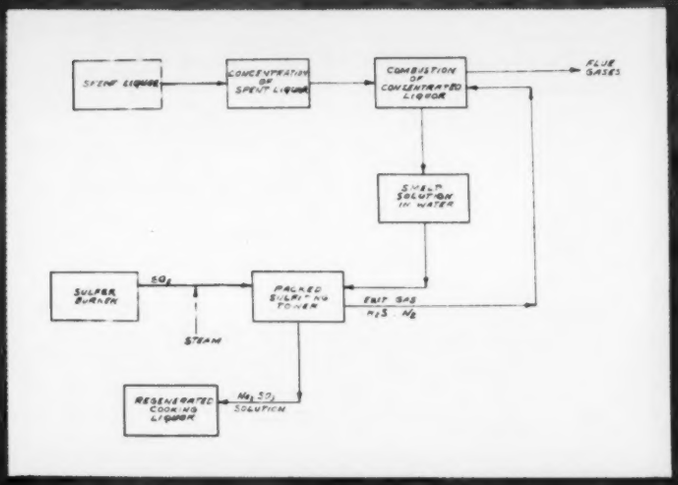


FIGURE 6. Institute Process

plant at Lynchburg is in production.

A number of problems have been encountered. Corrosion has been serious, necessitating many changes in equipment. It has been necessary to use supplemental fuel oil to obtain smooth furnace operation. This reflects the low heat content of the spent liquor and the rather small size of the recovery furnace. The kraft-like odor from the recovery plant may be a source of complaints.

3. Sivola—Considerably More Complicated

The Sivola process of chemical recovery is quite similar to the Mead process. A plant utilizing it has been operated for six years at Rauma Repola Oy in Rauma, Finland. A description was given at the TAPPI Alkaline Pulping Conference in September 1958.

The chemical recovery process begins with evaporation and burning of the spent pulping liquor. Conversion of the smelt solution to sodium sulfite cooking liquor is carried out as shown in Fig. 3. The green liquor from the recovery furnace operation is carbonated to remove sulfide in the form of hydrogen sulfide and convert the sodium sulfide to sodium carbonate and bicarbonate. This is basically similar to the Mead process with the important exception that essentially pure carbon dioxide is used instead of flue gas. This is claimed to result in a better quality cooking liquor that is free from sulfides and thio-sulfates. The hydrogen sulfide is burned to sulfur dioxide, which is passed countercurrent to the carbonated solution to produce the desired cooking liquor.

Considered by Nekoosa-Edwards

The Sivola process is being considered by Nekoosa-Edwards Paper Co. for installation in connection with its acid sulfite pulping operations. At present, no plans are under way for using this process on semi-chemical pulping liquors. Combustion Engineering has reported that it would be difficult to justify any of the presently known recovery processes, including the Sivola process, upon an economic basis except where large semi-chemical plants are concerned. Combustion Engineering would not recommend installing a Sivola conversion plant in conjunction with unbleached semi-chemical production. But, the company feels it may be justified for large-scale bleached pulp installations.

The Sivola conversion process is considerably more complicated than the Mead process. Undoubtedly, the equipment cost would be higher. It may well be that certain grades of pulp will require the better quality cooking liquor obtained than is possible with the Mead process. However, for most semi-chemical operations it seems likely that the Mead process produces a satisfactory cooking liquor.

An important advantage claimed for the Sivola process is that it is essentially free of odor. There has been no commercial evaluation of the Sivola process in the U.S.A. as yet. Since it is extremely difficult to translate operating experiences of other installations to American conditions, a domestic demonstration plant is required in order to evaluate it for U.S. use.

4. Gauvin – A Comparative Newcomer

The atomized suspension technique developed by Dr. W. H. Gauvin and his associates at the Pulp & Paper Research Institute of Canada is a comparative newcomer in this field. It utilizes a different approach and has created considerable interest in the industry. A simplified flow sheet is shown in Fig. 4.

The heart of this process is a high-temperature pyrolysis performed in the absence of air. This breaks down the organic part of the spent pulping liquor to various simple fractions, such as carbon, hydrogen sulfide, carbon monoxide, carbon dioxide, methane, hydrogen, water vapor and others. The inorganic fraction appears mainly as sodium carbonate. The gases are separated from the solids and burned to provide the necessary heat and to convert all the sulfur compounds to sulfur dioxide. The sodium carbonate is then dissolved and used to absorb the sulfur dioxide resulting from the gas combustion that produces the desired cooking liquor. So far the experimental work has been carried out in small pilot reactors at the laboratories of the Pulp & Paper Research Institute.

Recently, Green Bay Paper & Pulp Co., Green Bay, Wis., has announced it has submitted plans to the Wisconsin State Committee on Water Pollution for engineering and construction of a commercial size reactor. A 60-ft. reactor operating at temperatures over 1,400°F is proposed.

In addition to the Green Bay action, Dr. Gauvin has reported that two Canadian mills are currently studying the engineering and economic aspects of semi-chemical recovery by the atomized suspension technique. It is believed that a commercial plant would be installed if the studies indicate it might be successful.

Laboratory studies on the atomized suspension technique indicate its future promise. However, competent engineers have raised many questions that can only be answered on the basis of full-scale installations. Such an installation may come soon to provide a much clearer picture of the application of this process to semi-chemical recovery.

5. Bradley – Full-Scale Trials Under Way

The Bradley process, under development and promotion by Western Precipitation, also begins with evaporation and burning of the spent liquor. The flow sheet is basically as shown in Fig. 5. The smelt solution is concentrated in a suitable salt evaporator to cause crystalization of sodium carbonate. This is removed from solution, and the residual filtrate containing the sodium sulfide and some sodium carbonate is mixed with the spent liquor. The mixture is aerated to react the sulfide and lignin sulfonates forming thiosulfates. The aerated mixture is burned in the furnace, yielding sulfur dioxide in the flue gases. The flue gas containing the sulfur dioxide is fed counter-current to the sodium carbonate solution prepared from the crystaline sodium carbonate to form the cooking liquor.

Initial investigation on the process was carried out by Western Precipitation in cooperation with Nekoosa-Edwards. A number of the unit operations were studied and engineering data obtained on a large pilot plant scale, but no full installation was made. Consolidated Water Power & Paper Co. has installed a 75-ton-per-day plant utilizing this process in connection with its semi-chemical operation at Wisconsin Rapids, Wis.

The Consolidated plant has so far been run only on an experimental basis. Information has been obtained on the individual steps, but continuous commercial operation has not been achieved as yet. This is planned for 1959 and should give a good picture of the advantages and problems.

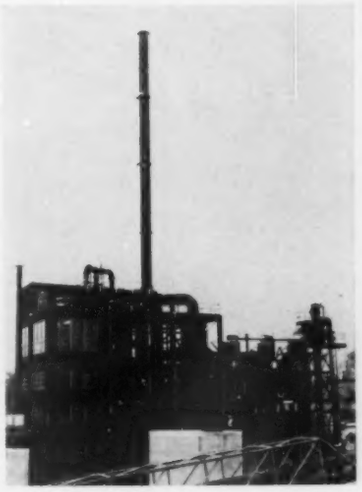


FIGURE 8. First mill-size installation of Mead NSSC recovery process is at Watervliet Paper Co. Cost was about $1,250,000.

6. Institute – In Use Since 1953

The process developed by the Institute of Paper Chemistry has been installed in five locations. The first installation was in the Tomahawk, Wis. mill of Owens-Illinois Glass Co. in December 1953. Others are at the Big Island, Va. mill of Owens-Illinois; the Acme, N.C. plant of Riegel Paper Corp.; the Filer City, Mich. plant of American Box Board Co., and at Huss-Ontonagon Pulp & Paper Co., Ontonagon, Mich.

The recovery process as shown in Fig. 6 utilizes conventional evaporation and burning. Conversion of the sodium sulfide in the smelt solution to sodium sulfite is accomplished by direct reaction with sulfur dioxide at temperatures approaching the boiling point of water. Under these conditions sulfur dioxide directly replaces hydrogen sulfide, giving a solution of sodium sulfite. The hydrogen sulfide evolved can then be burned to sulfur dioxide, which is reused. A discussion of the laboratory work has been published, but very little information is available on the commercial application. It would seem likely that an odor problem would be associated with this particular recovery method.

Serious Questions Remain

Considering all these different approaches to the problem of semi-chemical recovery, one conclusion stands out. That is that there is no proven satisfactory solution to this problem. All the schemes pose serious questions that must be answered. The technical picture is certainly not very clear, but far more is known about the technical aspects than is known about the economics. The cost of any of these plants is very high. A rule of thumb estimate is $2,000,000 to $3,000,000 for a 100-ton plant. Much clearer pictures of the economics are needed before any one of these will be adopted.

A better idea of the cost involved can be obtained from direct experience with the Zimmermann and Mead installations. Hammermill has invested about $1,000,000 on the Zimmermann plant. Fig. 7 gives a picture of the plant and illustrates the cost of even a small installation. The Mead plant at Watervliet represents an investment of $1,250,000 million dollars. Fig. 8 gives an idea of the size of the installation for this amount of money.

Looming: Bleach Plant Effluents

This discussion has concentrated on the spent pulping liquor problem. However, another problem looming ahead must be mentioned. This is the disposal of bleach plant effluents. These are being studied by the National Council for Stream Improvement and many others but present a very difficult area for pollution abatement. It is an area that must be solved if production of bleached neutral sulfite semi-chemical pulp is to grow.

We would like to acknowledge the help and information provided by the various individuals closely allied with these developments. In particular, we recognize the assistance provided by Mr. F. J. Zimmermann of Sterling Drug Co., Mr. W. J. Darmstadt of Babcock & Wilcox Co., Mr. E. H. Kennedy of Combustion Engineering Inc., Dr. W. H. Gauvin of the Pulp & Paper Research Institute of Canada, Mr. G. K. Dickerman of Consolidated Water Power & Paper Co., Dr. Roy P. Whitney and Mr. S. T. Han of the Institute of Paper Chemistry.

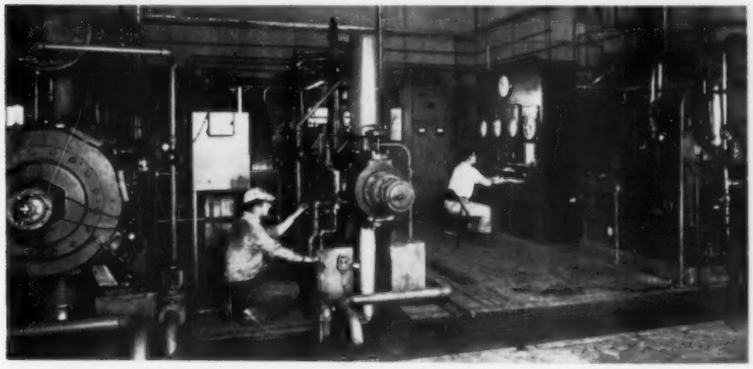


FIGURE 7. Inside the operating building of Zimmermann plant at Hammermill Paper Co., installed at cost of about $1,000,000.

COMPLETE UTILIZATION OF THE FOREST HARVEST at Diamond Gardner's new lumber-pulp-molded products center at Red Bluff, Cal.: (1) Molded pulp plant; (2) pulp mill; (3) log pond; (4) sawmill; (5) steam power plant; (6) lumber dry kilns; (7) planing mill; (8) lumber storage; (9) executive offices; (10) effluent clarifying plant; (11) compartmented settling basin, and (12) percolation pond.

Integration at Red Bluff

. . . where Diamond Gardner operates northern California's first pulp mill as part of lumber-pulp-molded products plant

By LOUIS H. BLACKERBY
Western Editor, PULP & PAPER

● ***SITUATION:*** Diamond Match Co.—which merged with Gardner Board & Carton Co. in 1957 to become Diamond Gardner Corp.—has qualified for many years as one of the leading California producers of lumber and has operated pulp and match plants in other parts of the nation. Diamond entered the timber industry in California nearly 60 years ago and has built up its timberland ownership to 220,000 acres. A pioneer in planned forest management, it was first in the state—and second in the nation—to have its forest holdings officially dedicated as a tree farm.

During the past several years the company's California lumber and matchblock production have centered around the city of Chico, an olive-growing area some 42 miles southeast of Red Bluff. Rather widely separated sawmills in the region processed logs into lumber for shipment to the Chico operations for remanufacture.

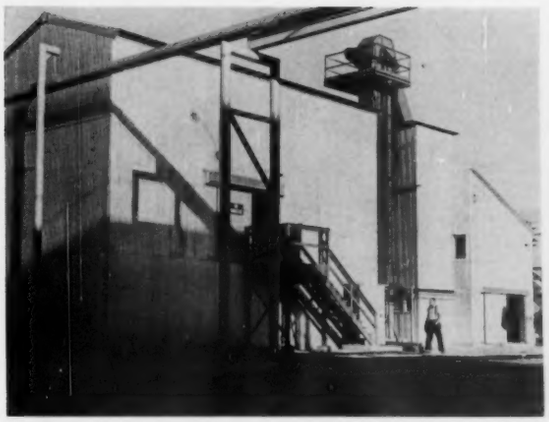
THE PROBLEM: How to more effectively and economically utilize the timber harvest of this country, whose pulp and pulp products now account for the largest portion of over-all volume—having displaced the former dominance of matches and lumber. Diamond had long since qualified itself as a quality manufacturer of lumber and associated products. The field of opportunity yet open concerned more intensive utilization of manufacturing left-over and forest wood of such low value that it was submarginal as far as converting to lumber was concerned.

To achieve such an objective called for (1) consolidation of the prime processing of logs at a central location and (2) the provision of additional manufacturing facilities at that point to utilize by-product wood from lumber-making processes and forest residues.

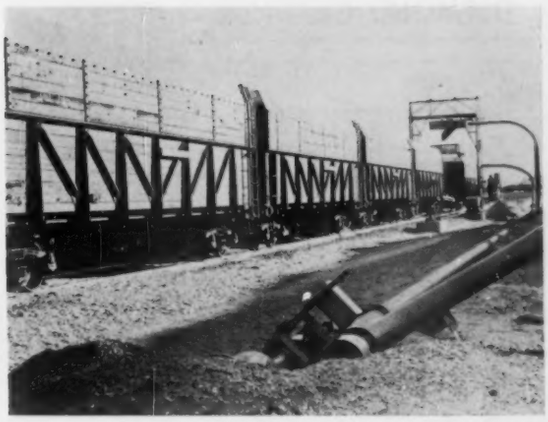
THE SOLUTION: Diamond Gardner acquired a 400-acre plantsite (the same area that Olin Mathieson Chemical Corp. had previously optioned and released) near the Sacramento River at the southern edge of Red Bluff. An entire production center has recently been completed by Diamond Gardner on this site for complete log utilization.

Logs arriving at the multi-plant operation are dumped into a 42-acre storage pond. From there they enter the modern sawmill producing 90,000,000 bd. ft. annually. Before reaching any of the three Sumner band headrigs, the logs pass through a Nicholson ring barker. The by-product utilization plan of the entire center is predicated on the elimination of bark and other foreign material from the logs prior to processing.

Sawlogs are converted into lumber and the resultant leftovers segregated for highest utility conversion. All bark and sawdust are used as fuel in the



CHIPPING BUILDING RECEIVES CLEAN WOOD residuals from sawmill for conversion into chips. Rader Pneumatics system (building at right) transports chips to pulp mill storage or rail cars.



MARKET CHIPS DELIVERED to loading station are compaction-loaded directly into rail cars from Rader Pneumatics pressure transport. In-line valve (foreground) diverts chips to fuel pile in emergency.

boiler plant. Slabs, edgings and trims are collectively routed to one of two 66-in. Sumner chippers (one of the two serves as stand-by) and converted into pulp chips. After passing through a Rotex shaker screeen the chips go to a Rader Pneumatics high-pressure system for delivery to (1) an outside storage pile at the pulp mill; (2) a loading station, where they discharge directly into rail cars for shipment to purchasing mills, and (3) (in case of emergency) to a stock fuel pile adjacent to the power plant.

Making Pulp From Sawmill Leftovers

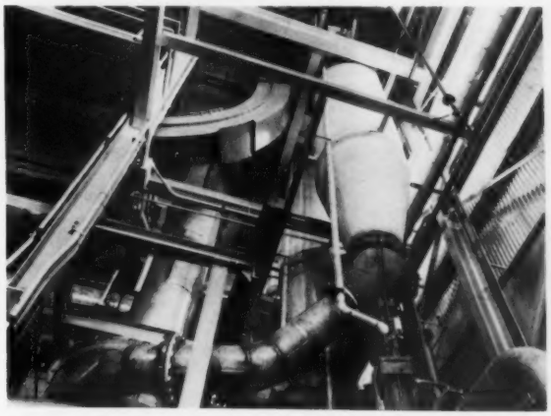
The manufacturing center recovers 0.6 unit pulp chips from clean leftovers for each 1,000 bd. ft. of lumber produced—approximately 45 cu. ft. of solid wood per 1,000 ft. of lumber. By mechanically converting these chipped residues into pulp, the lumber operations serve as a raw product source for the pulp mill that in turn provides pulp for the molded pulp plant.

The pulp mill—only mill on West Coast utilizing the Bauerite process—has a designed capacity of 75 tons per day and was built with the view to increasing capacity when that becomes feasible. Processing essentially consists of chip steaming followed by three stages of defiberization. The only direct use of chemicals in the pulping process is to increase brightness.

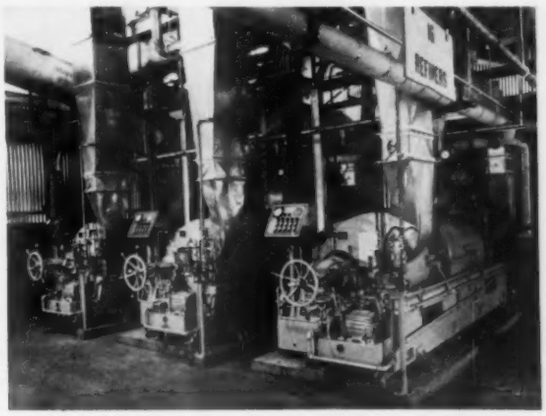
Preliminary to deciding that the Bauerite process was the answer to wood utilization needs at Red Bluff, Diamond Gardner set up a pilot plant this process. There, studies evaluated pulp mill at Ogdenburg, N. Y., using the process for pulping hardwoods as well as Eastern and Western coniferous species.

As pointed out at that time by Dr. James E. Foote, DG's research director (and reported in Aug. '57 P&P), "Our studies have indicated we can produce satisfactory fiber." Regarding the continued need for pocket grinders for manufacturing groundwood type pulp for molded products, he said, "Someday this process (Bauerite) may replace these grinders, since this method permits better utilization of residues."

That Diamond Gardner selected the process and consequently built the first such commercial mill as an integral part of its new wood utilization center is tangible indication of successful pilot plant performance.

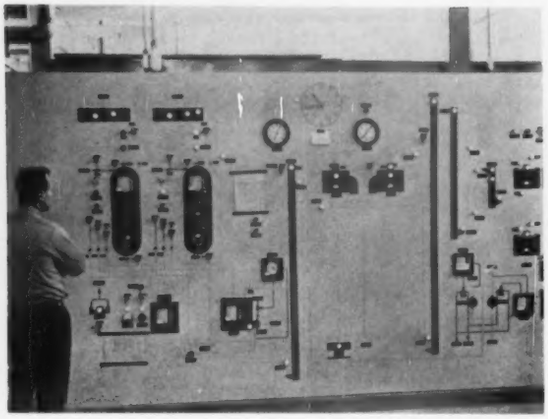


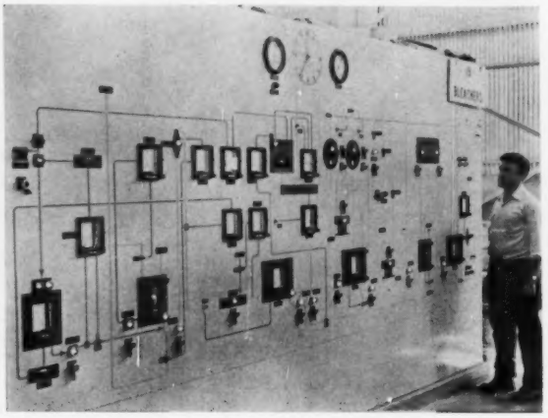
PENETRATING CHIPS (left) in two Bauer Bros. rapid cycle digesters that blow at conclusion of cycle, recharge with chips and repeat the entire cycle—all automatically by instrument control. Chips discharge through Powell hydraulic blow valve and Alaskan Copper stainless line to



Link-Belt live bottom bin with Baldwin strain gauge. FOLLOWING PRIMARY REFINING SECTION are these (right) double-disc 411F Bauers comprising the secondary (and final) refining system. Total horsepower for section: 4,000.

DIAMOND GARDNER





HANDLING FLOW AND PROCESSING throughout pulp mill are these graphic panels, engineered by Sweco and equipped with Fischer & Porter records and Foxboro control instruments. Primary panel (l.) covers operations from chip bin to refined stock chest, secondary panel (r.) on to pump delivering stock to molded products plant.

Highly Instrumented Pulp Mill

Two graphic panels control stock processing and handling from chip bin to the departure of final pulp for the molded products plant. Because of this extensive use of instruments, the pulp mill operates with a four-man crew plus supervisory staff. That's true for day and swing shifts; the night shift takes three men. Each shift has a pulp mill operator, who is responsible for impregnating, refining and other functions carried on from No. 1 control panel; the assistant pulp mill operator is responsible for No. 2 panel operations, such as screening and deckering; a utility man assists each of them and also has responsibility for auxiliary functions. For day and swing shifts only, the fourth man operates a tractor for moving chips from outside stock pile storage to the infeed end of the Rader Pneumatics high-pressure pipe transport system delivering directly to the two Redler chip bins.

A Stephens-Adamson rotary plate feeder at the cone bottom of each chip bin control-feeds chips to a conveyor leading to one of the two 200-cu. ft. digesters.

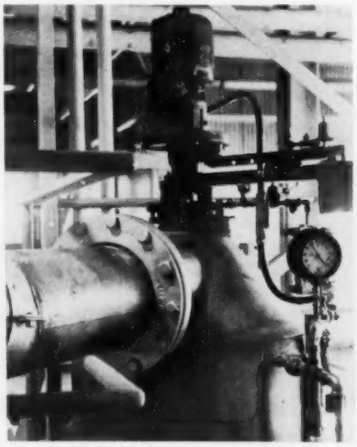
Impregnating cycles – essentially hot-water (non-chemical) impregnation–are of approximately 10-min. duration but can range from 5 to 15 min. Digester charges are purged at termination of the impregnation period by two-stage blows–first at 50 psi and then, 30 sec. later, at 25 psi.

An elaborate Link-Belt transport system receives impregnated chips from the digesters (at which point cooks are weighed) and subsequently conducts them to consecutive processing stages throughout the entire stock refining section. Loop conveyors immediately ahead of the Pressafiners, primary and secondary refiners have the dual function of keeping the tributary machines supplied with chips (or stock) and also serve as flow-eveners.

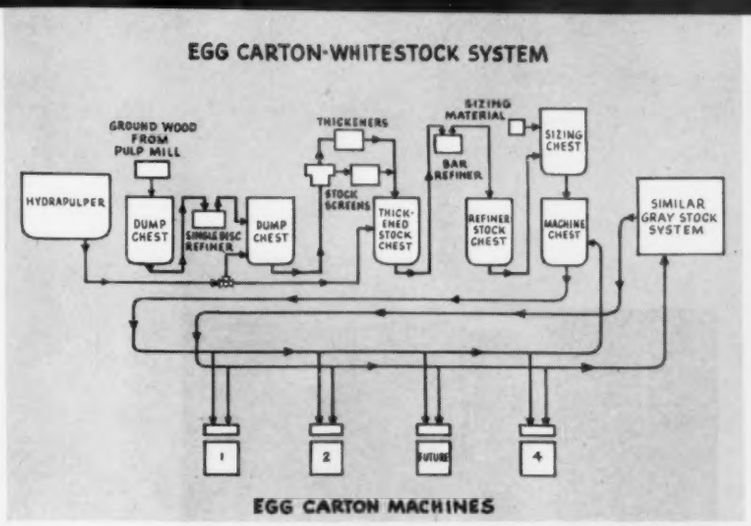
Bleach chemicals are used to bring stock up to 60 GE brightness. These chemicals–tripolyphosfate, sodium hydrosulfite and soda ash individually control-fed by Wallace & Tiernan dry feeders–are added to stock as it leaves the refiner stock chest. A positive displacement pump (Lapp Pulsafeeder) injects the chemicals into the stock line. Except for the reaction that takes place in a small retention chest, the bleaching occurs in the line of flow. Peroxide is also being tried directly in the refiners.

Stock, with chemicals, flows through a Foxboro flow meter and an Impco in-line steam mixer to the retention chest before being screened.

THICKENING CLEANED STOCK on two Impco deckers in conjunction with Kalamazoo tile chest.



CONTROLLING CONSISTENCY with a DeZurik regulator prior to pumping to molded pulp plant at 4½%.



EGG CARTONS OF MOLDED PULP. Chart shows flow diagram of operations in egg carton section of molded pulp plant. At right, on Diamond Gardner's own molding machine, wet egg carton pre-forms move from molding drum into dryer.

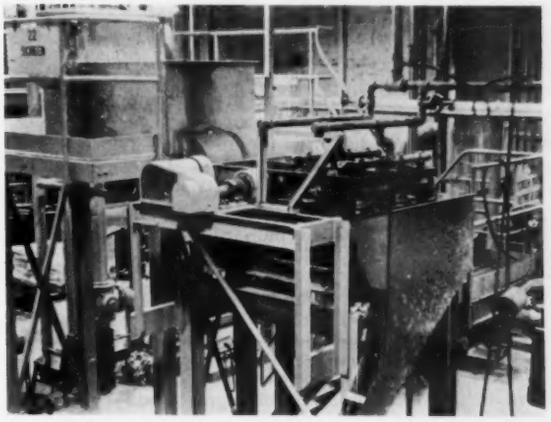
Making, Finishing Molded Products

The pulp mill's entire output goes directly to the 286,000-sq. ft. molded products plant for use in the manufacture of food containers, plates, egg cartons and other molded pulp products. Not only is this Diamond Gardner's largest plant of this type, it's the first big one on the Pacific Coast.

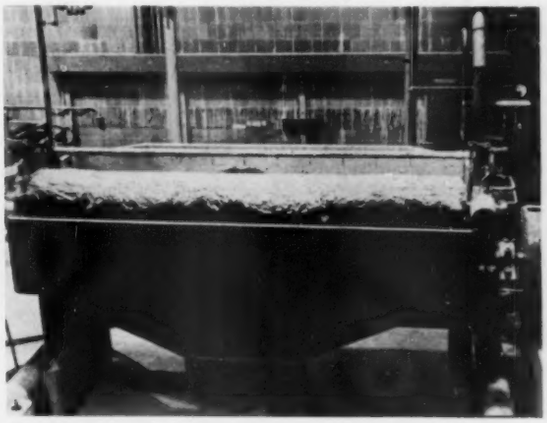
Productionwise, the molded products plant is divided into two prime segments—one for egg cartons, the other for manufacturing plain and duplex molded products. These two segments parallel each other and occupy respective longitudinal halves of the large building. Each has its own pulp preparation section, molding machines, dryers, packaging and warehousing.

Except for the locally-produced groundwood-type pulp, stocks consist of virgin market pulps, broke and side run news. Three pairs of primary pulpers, each consisting of two similar units, slush-process the dry-fiber materials and the groundwood pulp. These pairs include two Hydrapulpers in production on the egg carton side, two Dynapulpers and two Hydrapulpers on the Foodtainer plate side.

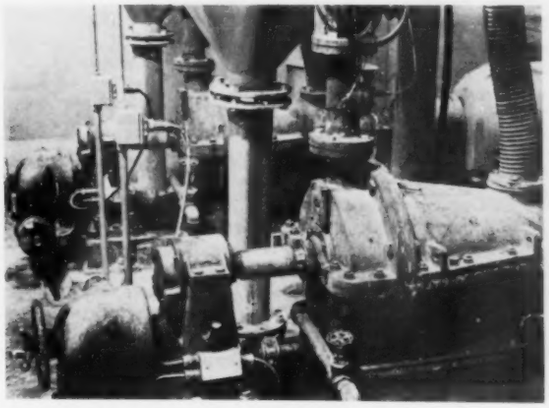
The short period of elapsed time



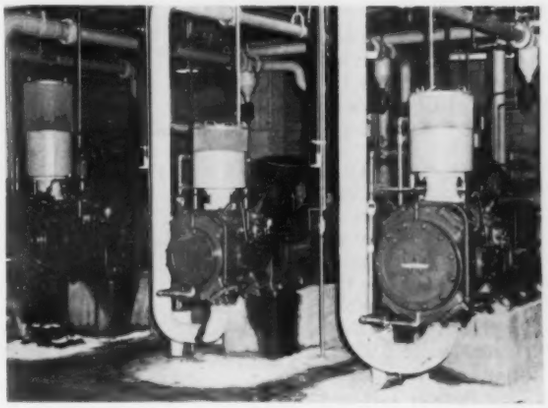
REMOVING FIBER BUNDLES from slush pulp by processing through Bird-Jonsson screens.



THICKENING SCREENED PULP on Black-Clawson decker for storage in tile tanks.

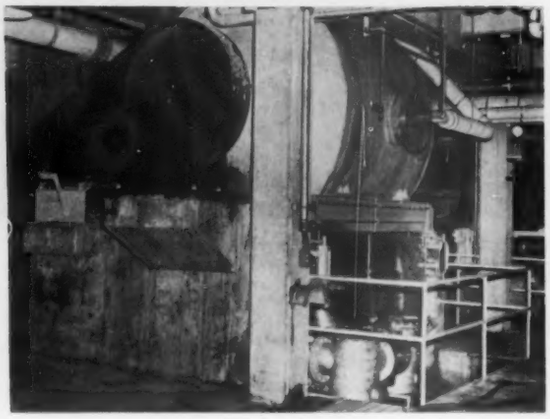


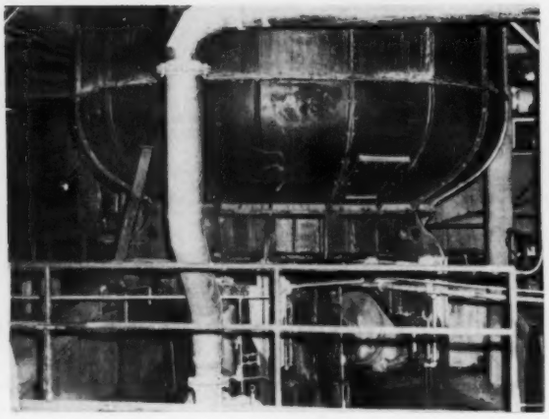
FINAL PROCESSING on both "sides" of molded pulp plant is given by E. D. Jones refiners.



COMPRESSED AIR IS SUPPLIED by battery of Worthington compressors.

DIAMOND GARDNER





PULP SLUSHERS INCLUDE Rice Barton Dynapulpers (left) for duplex stock and Black-Clawson Hydrapulpers (right) for egg carton and plain molded stocks.

between starting the foundation work and production start-up is a tribute to engineering, planning, the equipment suppliers and the on-site contractors concerned. Less than 13 months elapsed before the first carload of 300,000 molded egg cartons rolled from the Red Bluff plant. Now three egg carton machines are in production with a total capacity for turning out several thousand units daily.

The other production "side" has capacity for producing thousands of molded pulp items every 24 hours, including DG's line of "America's strongest paper plates." Four molding machines, with associated steam dryers, make high-quality duplex plates, partition plates and picnic plates. The firm's Foodtainer line—molded pulp trays for market packaging of meats, poultry, fruit, etc.—are made by six company-built machines each delivering to a Wolverine steam dryer. The molds have interchangeable dies to facilitate producing in various size-shape combinations as determined by market demand.

Steam Power from Residues

Three Riley generators supply steam for the entire center. These units, each rated at 60,000 lb/hr. capacity, are equipped with Buffalo fans for forced and induced draft and produce saturated steam of 325-psi working pressure. Control is provided by a Hays-built automatic panel equipped with Foxboro pneumatic indicators and controllers and Hays electrical instrumentation.

Fuel consists of refuse – hogged bark, sawdust, shavings from the lumber manufacturing operations—burned in suspension for steam generation. Because of the efficiency achieved, less than the calculated amount of fuel has been required.

Continuous users of steam in significant amounts include kilns for drying lumber (50,000 lb./hr.) and the molded pulp plant (30,000 lb./hr.). The sawmill consumes 44,000 lb./hr. during its two eight-hour shifts.

PRINCIPAL SUPPLIERS

ENGINEERING SOUTHWESTERN ENGINEERING CO.

GENERAL CONTRACTOR: Del E. Webb Construction Co.

SUBCONTRACTORS: *Piping:* McClenahan Mechanical Contractors Inc.; *Electrical:* Trowbridge & Flynn Electric Co.; *Mechanical:* Rosendahl Corp.

MAJOR SUPPLIERS: MOLDED PRODUCTS PLANT

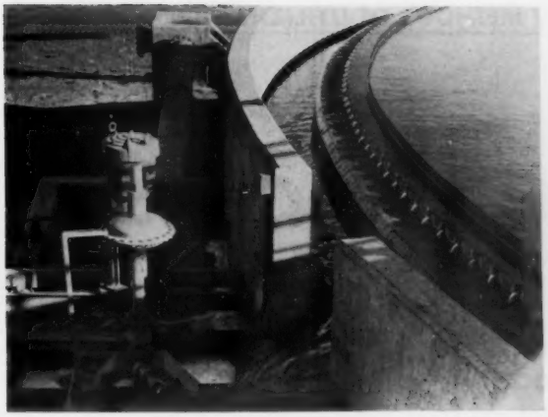
Substations: General Electric Co.
Motor Control Centers: Square D Co.
Pumps: Warren Pumps, Inc.
Motors: General Electric Co.
Instrumentation: Fischer & Porter Co., Fisher Governor Co., Foxboro Co.
Refiners: Bauer Bros. Co., E. D. Jones & Sons Co.
Hydrapulpers: Black-Clawson Co.
Dynapulpers: Rice Barton Corp.
Consistency Regulators: DeZurik Corp., Trimbey Machines Inc.
Thickeners: Black-Clawson Co.
Screens: Bird Machine Co. (Jonsson)
Tile Chests: Kalamazoo Tank & Silo Co.
Vacuum Pumps: Nash Engineering Co.
Chemical Feeders: Wallace & Tiernan Inc., Lapp Insulator Co.
Compressors: Worthington Corp.
Blowers: Spencer Turbine Co.
Egg Carton Machines: Diamond Gardner Corp.
Plain Molding Machines: Diamond Gardner Corp.
Duplex Molding Machines: Diamond Gardner Corp.
Fabricated Stainless Steel: Alaskan Copper Works

MAJOR SUPPLIERS: PULP MILL

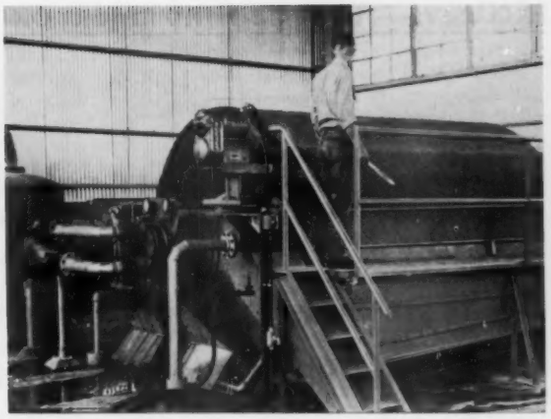
Digesters: Bauer Bros. Co.
Pressafiners: Bauer Bros. Co.
Refiners: Bauer Bros. Co.
Centri-Cleaners: Bauer Bros. Co.
Screens: Improved Machinery Inc.
Deckers: Improved Machinery Inc.
Agitators: Improved Machinery Inc.
Dewatering Screens: Southwestern Engineering Co.
Pumps: Warren Pumps, Inc.
Chemical Feeders: Wallace & Tiernan Inc., Lapp Insulator Co. Inc.
Motors: General Electric Co.
Motor Controls: Square D Co., General Electric Co.
Instrumentation: Foxboro Co., Fischer & Porter Co.
Tile Chests: Kalamazoo Tank & Silo Co.
Conveyors: Link-Belt Co., Stephens-Adamson Mfg. Co., Rader Pneumatics Inc.
Consistency Regulators: DeZurik Corp.
Fabricated Stainless Steel: Alaskan Copper Works
Heat Exchangers: Southwestern Engineering Co.

EFFLUENT PLANT: Dorr-Oliver Inc.

STEAM POWER PLANT: Riley Stoker Corp.



FLOWING DOWN AERATION LADDER en route to 9¼-acre settling basin is clean water from Dorr-Oliver clarification basin.



DORRCO FILTER DEWATERS SLUDGE from recovered effluent water for disposal ahead of the settling-percolation ponds.

How DG Cleans, Disposes of Effluent

Disposal of effluent from pulp and molding processes was one of the preliminary factors requiring solution to obtain state approval. Establishment of an integrated forest products center near the banks of the Sacramento River hinged upon the elimination of any possible effluent disposal problems.

The company developed and provided a modern design effluent treatment plant complete with associated water purification auxiliaries, which has proven effective. Donald A. Hunter, operations mgr., states, "All tests to date show that processed water from the treating system could be discharged into the Sacramento and comply with state water pollution control standards." However, he points out that no discharges have been made into the river. Instead, disposal of cleaned water from the system has been taken care of through natural evaporation and underground percolation.

Effluent water from plant operations goes to a Dorr-Oliver clarifying system. The water flows to a clarifying basin, where flocculants are metered in with the water. Sludge recovered from the basin goes to a Dorr-Oliver vacuum filter located in the adjacent building. Fibers and particles are collected on the revolving diatomite covered drum and the resultant mat removed for disposal.

Water of 25-30 alpha units turbidity discharging at the clarification basin outlet flows down aerating stairs en route to a three-compartment, 9.25-acre settling basin. As the water progresses through this sectionalized area it becomes increasingly clear and finally flows through the outlet into a seven-acre percolation pond.

From this final body the water disperses underground. Natural subterranean escapement has been intensified by the vertical installation of twelve 30-in. diam. slotted pipes in the percolation bed. Pipes extend 18 ft. below and 2 ft. above the bed.

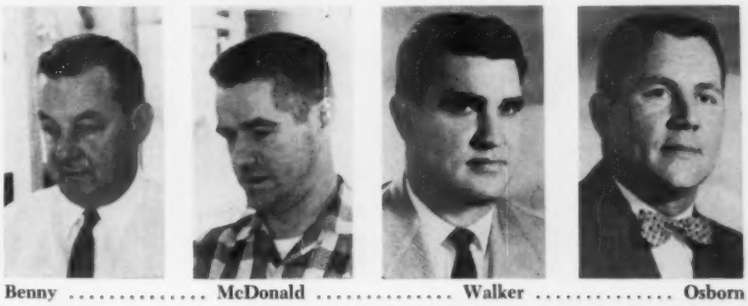
Evaporation from the large log pond and the 16.25-surface acre settling-percolation impoundments dissipates a significant amount of water. The log pond evaporation losses—approximately 450,000 gpd in summer and fall—are replaced by clarified water from the disposal system.

Two deep wells provide water for the entire production center.

In Charge of Pulp and Molding Operations at Red Bluff

Holt ..... Hunter ..... Peterson ..... Horton

Plant engineer is Ralph Holt; operations mgr. is Don Hunter; asst. to gen. mgr. is Dave Peterson; molded pulp plant mgr. is J. L. Horton.



Benny ..... McDonald ..... Walker ..... Osborn

Pulp mill mgr. is J. C. Benny; pulp mill foreman is Phil McDonald; molding supt. is John F. Walker; supervisor of electrical and instrument maintenance is William Osborn.

EXCLUSIVE—FIRST PUBLISHED REPORT ON NEW METHODS OF UTILIZING BAGASSE

New Bagasse Process

Key to its success is fractionation. Fiber selection results in manufacture of two kinds of pulp. Pith is utilized.

By DR.-ING. DANTE SANDRO CUSI
President, Cia. Industrial de San Cristobal, S.A., Mexico City

The Basic Problem: FRACTIONATION

Annual plants have been used for a long time as a source of raw material for pulp, but their use has been limited to special conditions and only as a poor substitute for woodpulp. This fact is absurd if we consider that many annual plants contain a large proportion of good papermaking material that could be put to good use. But the amount of research invested in annual plant utilization is not comparable with the immense amount of work done on wood.

In analyzing the work done for the industrialization of annual plants in the manufacture of pulp, we find most efforts have had the purpose of finding more selective chemical pulping conditions to overcome the notorious degradation obtained by treating them under chemical conditions used in pulping wood. Very little study of the intimate structure of these plants, as related to the pulping reactions, has been carried to successful and convincing conclusions.

The chemical composition of wood is very much the same as that of annual plants although proportion of various components might be different. Chemical reactions that have been adopted by the woodpulp industry should apply also to the material we are studying.

Better Use of the Plant

The basic problem of pulping annual plants is the heterogeneity of their structure. To no one would it ever occur to cut a pine tree and put all of it in a digester. The tree should be trimmed, the leaves eliminated together with small branches, bark, nodes and all sorts of material that would not give satisfactory pulp.

When we try to pulp all the heterogeneous tissues of annual plants together, we find that some parts need lower concentration and temperatures while others need higher concentration or temperature; then the fraction that is pulped first, exhausts the chemicals in solution, and prevents the further pulping of the rest.

The basic problem, therefore, for good industrial utilization at low cost of annual plants, is **fractionation**, in order that each fraction of the plant may be used for its best application. If used in pulp production, each part should be treated under the best possible conditions so that its individual cellular components will have the least degree of degradation from the chemical reaction of pulping.

This is what we have done in San Cristobal. We have developed a process of fractionation by which we separate the original plant material into as many fractions as we desire and is economic to obtain, each being used for the most economic and suitable application.

Chemical Problem Recommends Sulfate Cook

Having solved the fractionation, the chemical problem has little importance: any one of the chemical systems used today in practice can be applied for pulping of the plant material, and all the enormous amount of past experience and know-how can be applied to this industry.

In general, we recommend the alkaline (sulfate) process because it produces a pulp with the highest degree of strength. Any kind of digester could be used, batch or continuous, but at San Cristobal, we decided on batch as it permits more elasticity.

HIS "GREAT DAY"—CANDID PHOTOS show how DR. CUSI's expressions changed as he told press conference and visitors of his dream come true—success of new bagasse process. Next to him in center view is GEORGE N. CARLETON, vice pres. in charge of Scott's foreign operations. In last view at right, Pres. T. B. MCCABE of Scott and DR. CUSI exchange happy smiles.

Fiber Selection

In order to differentiate the fiber obtained in our fractionating process we have designated in alphabetical order the successive fractions that need increasing chemical concentration and temperature conditions for pulping. The fraction that needs the lower chemical concentration and temperature will be called "A," etc. In practice, we did not find it very convenient to make more than two fractions because the equipment gets more complicated while the economical advantage lessens. By fractionating bagasse into two main fractions a very important improvement of the quality and economic picture can be obtained. In San Cristobal we obtain two main fiber fractions: "A" and "B" pulps:

"A" Pulp—Its Uses

Because of the pulping conditions of the "A" fractions, it is much more rich in hemicelluloses and, therefore, is very similar in its practical behavior to an already refined and fibrillated wood pulp.

Because of the small diameter of individual fibers, of the presence of some pith cells highly swollen, of the high surface to weight ratio, of the high percentage of hemicellulose, the contact points between fiber and fiber are numerous and the fiber bonding is strong. Therefore, this kind of pulp would produce, if used alone, a dense paper somewhat transparent with good tensile, but very poor tear strength. Its addition to woodpulp is, to some extent, equivalent to a degree of refining and by blending it with other pulps many good kinds of papers can be obtained.

In wrapping paper it could be used up to a 50%. In wax-base paper it could be used up to 80% and very good grades, including carbonizing tissues can be obtained with about 85% "A" pulp. This pulp can be readily bleached without difficulty. We recommend single stage bleaching with calcium hypochlorite. Very little refining is necessary because of the already swollen state of the fibers.

"B" Pulp—Its Uses

This pulp is similar in behavior to sulfite softwood pulp, the only difference being that it is made up by fibers much thinner and shorter than softwood but having good felting qualities. The tear characteristics are similar to sulfite pulp and it is much more sensitive to refining and with it all kinds of papers can be produced.

"A" and "B" pulps can be obviously blended together for obtaining intermediate kinds of paper.

The fact that two or more different kinds of pulp can be obtained simultaneously from bagasse, opens a new field in papermaking because by mixing pulps of such different basic characteristics as "A" and "B" pulp and woodpulp, a wide line of paper and boards can be produced in a way that it is much more controllable and less expensive than by using only one kind of woodpulp. The experience and know-how developed in San Cristobal will be available to companies that decide to use this process.

Process and Equipment: A Three-Step Operation

The development of industrial machinery for economical and simple operations for the processes set forth above in a theoretical manner, has been a long and difficult job.

The actual operations can be divided mainly in three steps: a) depithing, b) pith utilization, c) fiber selection.

A. DEPITHING. The work on depithing was pioneered by Dr. E. C. Lathrop of the Northern Regional Research Laboratory who applied for, and obtained, several patents on this subject, these patents being today the property of this company. These patents have, however, a theoretical value only, because, although it was shown that pith could be separated from fiber, the way devised in Dr. Lathrop's invention is too expensive in operation as well as in capital cost for an economical industrial production. Therefore, new processes and machines had to be developed.

The problem of depithing is different depending on the kind of bagasse used, the main difference being between freshly ground cane and stored bagasse. Nevertheless, the same machines with different adjustment can be used in both cases. The depithing process includes these steps:

1. Bale Breaking. This step is only necessary when stored bagasse is used. The bale breaker is made like a hammermill, with variable speed feed of the bales: it helps in opening up the bagasse and performing the first rough depithing operation. Consequently it might be useful also when fresh ground bagasse is used, although in this case, the feeding device of the bale breaker is properly modified.

2. Prescreening. This operation has the purpose of separating all the fines including small pieces of fiber-like material that have been ground by the sugar mill rolls and are not suitable for papermaking. This operation is necessary to prepare the bagasse for the proper depithing.

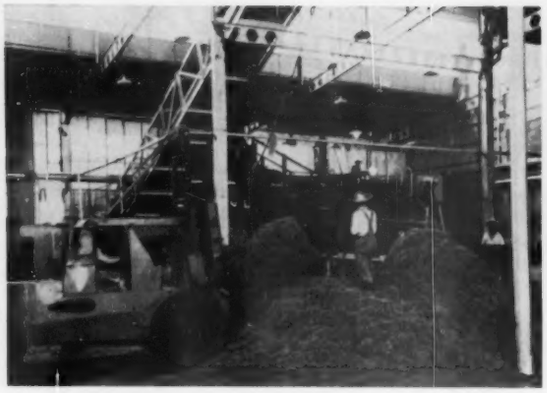
3. Depithing. The depithing operation involves scraping the fibers clean from adhered pith. This is a very delicate operation because fibers should not be in any way damaged or shortened, otherwise the kind of pith obtained would not be of the quality needed and there would be a more or

CHEMICAL CONSUMPTIONS AND YIELDS AT SAN CRISTOBAL

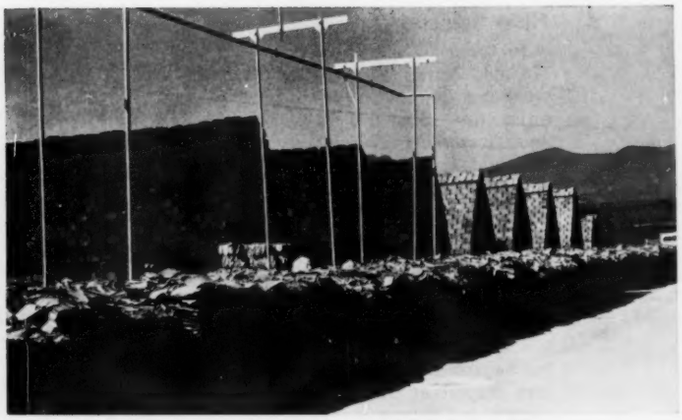
Process	*Whole Bagasse screening (dry depithing) on straight cook.*		*Depithed Bagasse Mixed Cook*		*Depithed Bagasse and Fiber Selection ("A" & "B" fractions only)*	
	Kilos	*%*	*Kilos*	*%*	*Kilos*	*%*
Raw Material						
Bagasse weight	1000		1000		1000	
Pith	80	(screened)	210	21	210	21
Fiber for pulping	900		730	73	730	73
Na OH (referred to pulping material	180	(20)	118	15	104	13.2
Products Obtained						
Pith for Feeds			210	21	210	21
Pulp	420	42	470	47	"A" 242 "B" 315	55.7
Total yield usable products (referred to bagasse)		42		68		76.7
Na OH consumption (referred to pulp)		42.8		25.1		18.7

(All figures referred to "bone dry fiber")

NOTES:	Low quality pulp (corrugating board, blending, etc.)	Better quality pulps, higher percentages can be used. Feed as by-product.	Best quality pulp wider use, suitable for market pulp. Highest yield. Feed as by-product.



A HYSTER (PORTLAND, ORE.) LIFT TRUCK IS USED here to handle bagasse in the new pulp mill at San Cristobal.



SHOWING HOW BAGASSE IS STACKED IN TRIANGULAR ROWS . . . Rain water flows off outside. San Cristobal mill stacks bagasse with its pith, which they say, permits outside storage up to one year—delaying degradation and fungii growth. Wet lap pulp in foreground, sold to nearby paper mills, will not be stored outside in this manner in future.

less important loss in fiber.

Scraping is done in high speed continuous operation machinery which develops direct metal to fiber contact. This allows high operating efficiency and low power consumption. The control can be by hand or fully automatic depending on the size of the operation. Depithing machinery is very reliable, fully suited for continuous heavy duty operation and maintenance is very low. Power consumption is about 1.4 hp per daily ton of incoming bagasse feed.

An important effect of our process is that any carbonized residue of the fire ahead of harvesting is eliminated with the pith, and a very clean pulp is obtained.

4. Separation. After the fiber scraping we obtain a continuous flow of cleaned fiber. Pith is separated by special screens.

5. Pith Treatment. Separated pith is pressed and dried or only dried, depending on the kind of operation chosen, and finally blown into the pith utilization department, together with the fines obtained in the first prescreening operation.

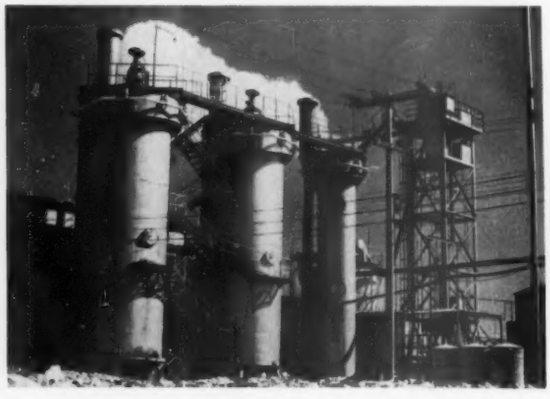
B. PITH UTILIZATION. The simplest utilization of pith and the one that should be done immediately in our opinion, is the preparation of feeds, and as a complement of fertilizers.

As each pith cell is filled with air, after the juice has been squeezed out, this air must be replaced with molasses in order to utilize the full liquid holding power of pith. Pith should be properly sterilized if a good quality of feed is to be obtained, and also should be deodorized because in even a short storing period, it would develop a moldy odor that, although not harmful, would certainly decrease the quality of the product.

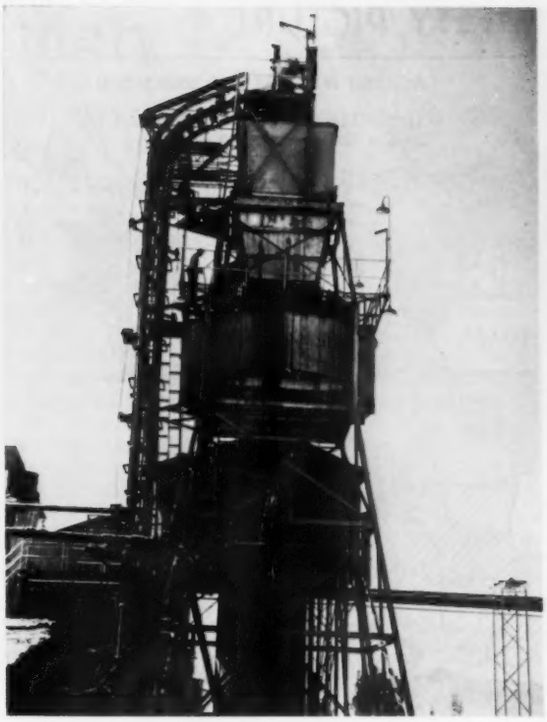
These three operations are performed by an exclusive process that we call "stabilization," because it stabilized the mixture of molasses and pith in such a way that it can be stored indefinitely in paper bags and handled easily as a dry solid. In very damp climates and when using high molasses content (above 80%) there is some degree of caking, but a simple mechanical action would disintegrate the feed. In such cases it might be well to use a lower percentage (about 72%). The equipment needed for stabilization is especially designed because of problems arising from the sticky nature of molasses. As mentioned, pith can be used as an anticaking agent in fertilizers.

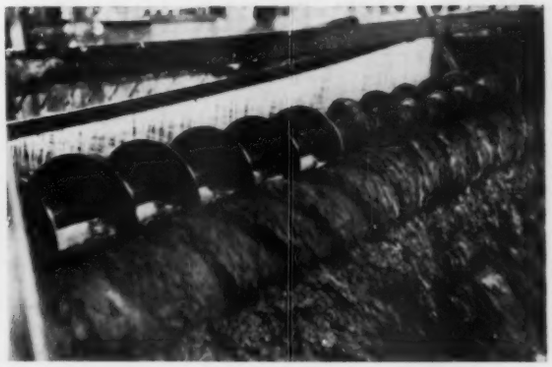
Its incorporation in paper or fiber boards is possible, especially if there is no need of a very clean surface.

C. FIBER SELECTION. This is performed in combination with the cooking operation and, therefore, it is



BLEACH PLANT OPERATIONS AND RESULTS. These pictures show (left) exterior view of bleach tower (hypochlorite, chlorination and caustic stages of bleaching are used); (across page, right) three 14 ft. (4 m) valveless washers, of which two are stainless steel; and (far right) the Minneapolis-Honeywell graphic panel board for bleach plant controls. Dr. Cusi singled out Brian Shera, veteran technical representative from Pennsylvania Salt Co., Tacoma, Wash., U.S.A., as having given great assistance to him by superintending the installation of chlorine delivery lines and setting up a very safe chlorine operation. Penn Salt has a plant in Mexico (Robert Ogden is head of the Mexican company) which supplies pulp mills with chemicals. Following bleaching are 20 Bauer Bros. (U.S.A.) Centricleaners. San Cristobal achieves 85 to 87% brightness or better with good strength, and this may be mixed with 20 to 40% purchased woodpulp for quality tissues.





DISCHARGE AFTER WASHING OF "A" PULP. This is usually given a one-stage hypochlorite bleach and used 50% in furnish for wrapping or 80% for wax-based paper. The higher quality "B" pulp generally goes into higher grade products. The two may be blended.

SAN CRISTOBAL DECIDED IN FAVOR OF BATCH COOKING . . . this digester is relatively small as compared to woodpulping standard digesters, and is specially designed for a fast cooking cycle.

recommended that the digesters be of modern type in order to obtain a good fiber selection and good cooking results with as low capital outlay as possible and good uniformity.

Batch or continuous digesters could be used. We would not recommend continuous systems for small productions. For large mills, continuous systems perform very well.

Batch Digesters Used

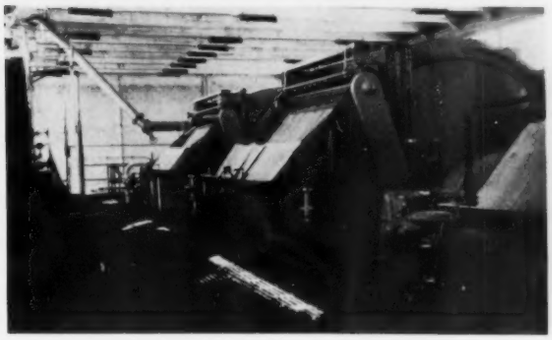
For San Cristobal, we decided in favor of batch digesters of a special type, because this system allows more elasticity in its operation, and easy control of all variables. We suggest as completely inadequate the use of rotary digesters or stationary ones of the classical type because this equipment does not allow uniform heat and chemical distribution in the digester. The chemical reaction of pulping bagasse, because of its very large surface in contact with chemicals, is very fast and, therefore, if the heating period can be reduced to a minimum by distributing properly the heat throughout the digesting space, the cooking cycle can be greatly decreased, thereby increasing productivity and the uniformity of the pulp. The rotary digesters could be converted into the fast cycle type with some modifications that are not expensive.

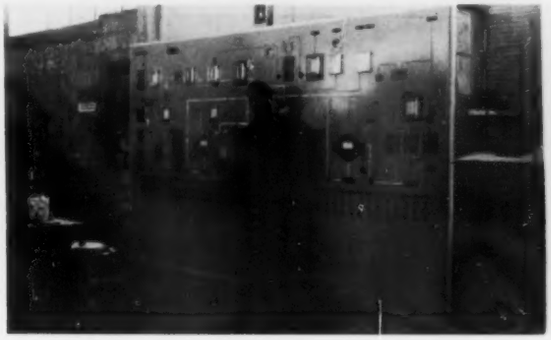
The fact that bagasse can be cooked in a very short time adapts it very definitely to continuous pulping, but the convenience of doing so, should be weighed carefully against the complications and high cost.

Screening of Pulp

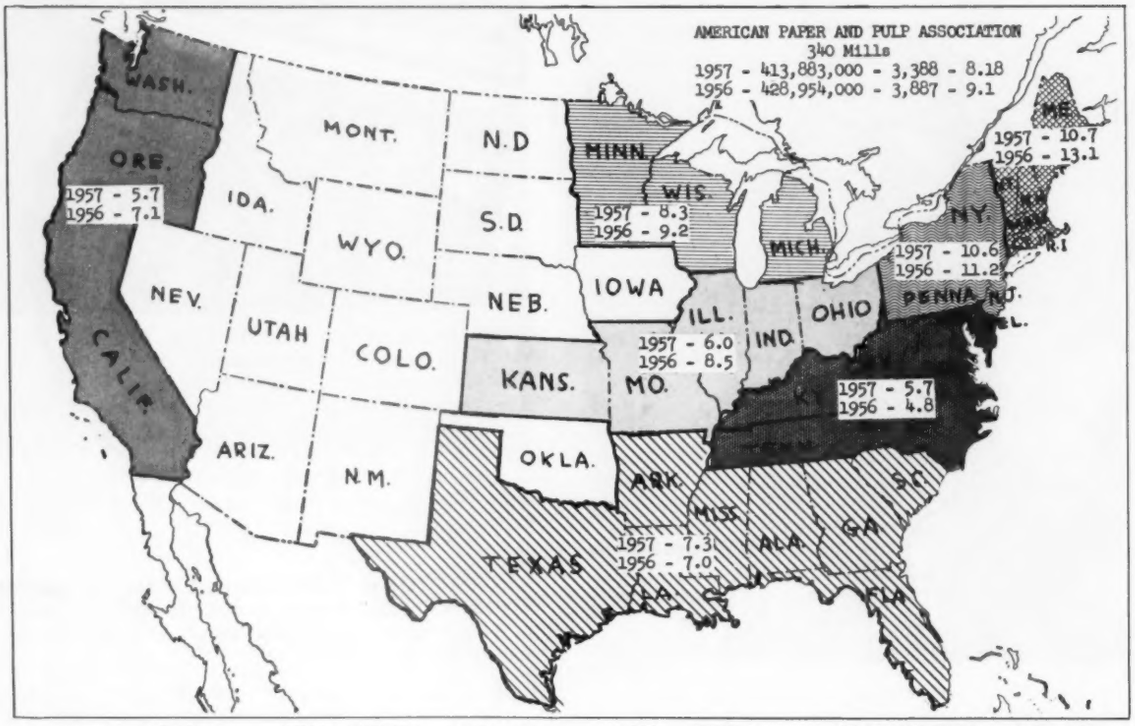
The actual fiber selection is made in a special kind of screen developed for this purpose. The variables in this process are many and can be set for making fiber selection at any level and get as many fractions as desired. At San Cristobal we obtain an important economical advantage by selecting bagasse into three main fractions: (1) pith (2) "A" fiber and (3) "B' fiber.

We use, as basic active chemical material, caustic soda. In an accompanying table we show different chemical consumptions and yields depending on the kind of pulping conditions used. END





PULP AND PAPER INDUSTRY SAFETY PICTURE



1957	REGION	MILLS	MANHOURS WORKED	ACCI-DENTS	RATE
	Pacific Coast	54	52,061,000	299	5.7
	Central Zone	22	32,421,000	185	5.7
	Mid West	23	30,491,000	183	6.0
	Southern Zone	38	81,879,000	601	7.3

1957	REGION	MILLS	MANHOURS WORKED	ACCI-DENTS	RATE
	Lake States	68	82,579,000	686	8.3
	Middle Atlantic	66	67,367,000	717	10.6
	New England	68	67,085,000	717	10.7
	No Mills Reporting				

Pulp and Paper Industry 1956 and 1957 Injury Frequency Rates by areas as reported to the American Paper and Pulp Association

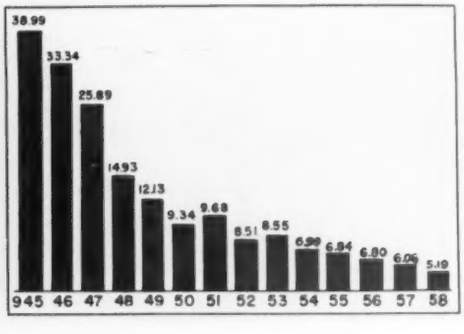
Leaders in Industry Safety

Continuing their outstanding accomplishment in accident reduction, the West Coast and Central Zone pulp and paper industries have scored a decisive leadership in the national safety picture.

During 1958 the 44 member mills of the Pacific Coast Assn. of Pulp & Paper Manufacturers recorded an accident frequency rate of 5.19—some 45% below the national average of 9.5 and in sharp contrast to the 6.06 established during 1957.

Only one other papermaking region is challenging the West Coast mills for safety supremacy, according to APPA 1957 data. This is the "Central Zone" as defined by APPA—consisting of six states (Delaware, Maryland, West Virginia, Virginia, North Carolina and Tennessee).

In 1957—the last complete year for which national figures are available—this region experienced 185 lost-time accidents in 32,421,000 manhours at 22 mills. For a comparative year—1957—there were 299 lost-time accidents in 52,061,000 manhours at 54 West Coast mills. The West Coast frequency rate was identical with that of the Central Zone in 1957 and these two areas were decidedly the national leaders.



FORTY - FOUR WEST COAST MILLS have shown a steady drop in over-all accident frequency since organization of the safety program of the Pacific Coast Assn. of Pulp & Paper Manufacturers.

Safety Needs of a Growing Industry

. . . stressed at 13th Annual Pulp and Paper Labor-Management Conference staged this year in three Pacific Coast cities

● Mill injuries are effectively decreased only through a concerted, cooperative safety effort on the part of both labor and management.

This was stressed at three recent meetings sponsored by unions and the industry on the West Coast, where it was reported that the 44 member mills of the Pacific Coast Assn. of Pulp & Paper Manufacturers have reduced injuries 86.8% since 1946. Working together through program stages ranging from over-all planning to detail application, the man in the mill and the man in the office lowered the 1946 in-plant frequency rate of 33.34 (lost-time injuries per 1,000,000 man-hours worked) to 6.80 in 1956. Further reduction through 1957 brought the figure to 6.06, while last year the rate stood at 5.19—well below the national average of 9.5 (based on APPA data).

S. J. Robinson, president of the association and vice pres. of Publishers' Paper Co., Oregon City, Ore., announced the welcome news to about 500 labor-management mill delegates attending the 1959 series of safety conferences sponsored by PCAPPM in cooperation with the United Papermakers & Paperworkers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers.

The meetings of this 13th Annual Pulp & Paper Labor-Management Safety Conference were held in Pasadena, Cal.; Portland, Ore., and Seattle, Wash.

To guide the West Coast's expanding safety activities, the association took major steps during 1958 to change methods and procedures to fit the needs of a growing industry. Taking the place of three separate planning committees—one for each state as in the past—an over-all coast-wide planning committee was formed to consist of 18 members, nine representing management and nine speaking for unions.

A 1958 accomplishment hailed at each of the three meetings was the National Safety Council's "Award of Merit," which was presented to the West Coast group in recognition of its successful promotion of accident reduction. Similar honors were given the association in 1953 and 1955.

Seeking further accomplishments, the cooperative program is expanding. Participation at all three meetings indicated a rapid increase in safety effort. Emphasis has been placed on (1) promotion of general safety consciousness, (2) off-the-job safety and (3) the completion of noise-level surveys in all member mills as part of the current "hearing conservation" program.

Management Participation

G. H. Gallaway, asst. vice pres., Crown Zellerbach Corp., reported how general use of safety shoes was accomplished at one Oregon mill. When sold in the storeroom, "few employes looked them over, much less purchased them." When the resident manager started wearing the shoes and several styles were placed on display near the pay window, interest rose. Today more than 85% of the employes wear safety shoes on the job as a result of this combination of "managerial participation and shrewd merchandising."

"If safety communications are sufficiently well developed," Mr. Gallaway stated at the Washington conference, "the accident prevention message must reach the home, where most accidents now occur. An employe who seriously injures himself by smashing his automobile or by falling from a defective stepladder while painting his house is just as much a loss to his family, his union and his company as though he were hurt on the job."

Safety Must Be Sold

The real reason why there are still so many lost-time accidents in industry is that industry is not sincerely convinced of the value of safety, according to F. H. Werling, vice pres.-manufacturing, Kimberly-Clark Corp., Neenah, Wis., spokesman for management at the California conference.

Mr. Werling gave the industry ample credit for making as good an improvement record as it has but pointed out that if as much fuss were made over safety as over customer complaints, quality, production efficiency, etc., the record would be much better.

He pointed out that the hard part of any effort is in the last few percentage points that lie between a good

CONFERENCE LEADERS (left to right) S. W. Grimes, managing director, Pacific Coast Assn. of Pulp & Paper Manufacturers; Oren Parker, vice pres., International Brotherhood of Pulp, Sulphite & Paper Mill Workers; S. J. Robinson, president of PCAPPM and vice pres. of Publishers' Paper Co., and Al E. Brown, vice pres., United Papermakers & Paperworkers.

OREGON SAFETY WINNERS honored by W. A. Callahan, (l), Oregon State Industrial Accident Commission, and W. A. Hannaford (r), United Papermakers & Paperworkers. With Governor's Safety Trophy for lowest frequency is J. A. Wilson, Publishers' Paper Co.; holding Labor-Management Safety Award for lowest 5-year frequency is J. B. Martin, Fibreboard Paper Products Corp.

record and a perfect one.

He also said there is a type of impulsive, hasty, careless worker who causes accidents simply because he doesn't make the effort or take the time to do a job safely. Such individuals should be put to work somewhere where they cannot cause accidents.

Combatting Noise

Hearing conservation was a prominent part of the sessions. Aram Glorig, director of the Los Angeles Research Center Subcommittee on Noise, discussed "ear protection" at each of the state conferences. He warned that the human ear, subjected to loud unwanted sounds for long periods of time, sustains permanent damage. Hearing is permanently impaired when workers work for years in noisy plants. Mr. Glorig advocates eliminating or reducing industrial noises where practical; where this can't be facilitated he recommends wearing adequate ear plugs to prevent such damage.

Safety at Home Vital

Guest speaker W. J. Billings, Western div. mgr. of Pacific Telephone & Telegraph Co., told the California group that off-the-job accidents were 20 times the rate of on-job mishaps when his company began a drive to take accident prevention into the home. This program dropped the off-job injury rate 17% in one year.

PULP AND PAPER MILL SAFETY IS THE GOAL OF THESE MEN, all members of the Coast-Wide Planning Committee for the 13th Pulp & Paper Labor-Management Safety Conference. They are (clockwise from left): W. J. Shaw and John Teevin, both of the United Papermakers & Paperworkers; R. M. Gilmore, Rayonier Inc.; M. E. McMichael, Millard Lamb, Ron Donell, Oren Parker and I. D. Isaacson, all of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers; Fred Harvey, Scott Paper Co.; S. W. Grimes (managing director) and Dan Adair (chairman), both of the Pacific Coast Assn. of Pulp & Paper Manufacturers; Willis Thompson (secy.), Simpson Paper Co.; Pete Schnell, Publishers' Paper Co.; W. S. Hibberd, Western Kraft Corp.; A. W. Hannaford and Al E. Brown, both of UP&P; J. Calvin Young, Kimberly-Clark Corp.; Merle Cashman, Crown Zellerbach Corp.; William Zimmerman and R. W. Hess, both of the PCAPPM.

The off-job program is carried out a good deal like the on-job effort. It begins with an inter-department safety committee that lays out programs, gets literature to the homes and formulates yearly plans. All off-job lost-time accidents are reported on printed forms, just like on-job injuries.

Monthly safety features are promoted, such as: "Fire Safety" in April, "Water Safety" in June, "Firearms Safety" in October, "Holiday Hazards" in December.

Pacific Coast Leaders—1958

1958 Rank No.	*COMPANY*	*Man-Hours Exposure*	*Disabling Injuries*	*Frequency Rate*
1.	Pacific Coast Paper Mills, Bellingham, Wash.	486,985	0	0
2.	Longview Fibre Co., Seattle, Wash.	197,273	0	0
3.	Fibreboard Paper Products Corp. Vernon Div., Los Angeles, Cal.	1,367,442	1	.73
4.	Kimberly-Clark Corp., Fullerton, Calif.	606,666	1	1.65
5.	Crown Zellerbach Corp., Port Townsend, Wash.	1,188,339	2	1.68
6.	Fibreboard Paper Products Corp., Sumner, Wash.	593,512	1	1.68
7.	Fibreboard Paper Products Corp., Antioch, Cal.	1,157,774	2	1.73
8.	Fibreboard Paper Products Corp., Portland, Ore.	497,465	1	2.01
9.	Rayonier Inc., Hoquiam, Wash.	1,369,637	3	2.19
10.	Fibreboard Paper Products Corp., Port Angeles, Wash.	378,931	1	2.64
11.	Fibreboard Paper Products Corp. West Antioch, Cal.	349,274	1	2.86
12.	Crown Zellerbach Corp., Port Angeles, Wash.	1,245,905	4	3.21
13.	Puget Sound Pulp & Timber Co. Bellingham, Wash.	895,524	3	3.35
14.	Longview Fibre Co., Los Angeles, Cal.	572,429	2	3.49
15.	Rayonier Inc., Olympic Div., Shelton, Wash.	275,558	1	3.63
16.	Rayonier Inc., Port Angeles, Wash.	815,811	3	3.68

Outstanding Safety Recorded on Coast

Despite the fact that new lows were established last year, the injury frequency rates of West Coast mills continue to move downward.

The 45 member mills of the Pacific Coast Assn. of Pulp & Paper Manufacturers have a 1959 composite injury rate to date of 4.18 per 1,000,000 man-hours. At this time last year the rate was 4.83.

Of the three West Coast states, Washington leads with a frequency of 2.99. This record reflects a continuous safety improvement over an already outstanding record. The mark a year ago was 3.74.

Of the 22 member mills in Washington, half were continuing at 0.0 frequency as of May 1. "Out front" was Pacific Coast Paper Mills, a division of Puget Sound Pulp & Timber Co. The plant had amassed 27 consecutive months of injury-free production.

Contributing significantly to the state's increasingly low frequency are two large mills. On May 1 Weyerhaeuser Timber Co.'s Pulp div. at Longview passed six months and 1,003,000 man-hours without a lost-time injury. The giant Camas div. of Crown Zellerbach Corp. had totaled 100 injury-free days for 1,415,000 man-hours.

Member mills in California have a 6.63 frequency, as against 7.72 for the same period last year. Oregon mills have established a mark of 4.49, slightly above the 4.35 of a year ago.

Fingering Today's Top Safety Needs

Pulp and paper section of Greater New York Safety Council probes for keener techniques to better its safety record

● Spurred by safety campaigns, the pulp and paper industry in the past 25 years has lowered its accident frequency rate from 17.77 to 7.15. That's a good record. But there is the danger that this same good record may lull the industry into a false security by too much emphasis upon frequency rates rather than considering the cost of accidents.

This was a challenge hurled to safety directors at the third annual meeting of the pulp, paper and paper converting section of the Greater New York Safety Council, held in New York City at the Statler Hotel on April 12.

There are just as many fatal high cost accidents today as were occurring 8 to 10 years ago in the paper industry, stated Leroy A. Faulkner, supervisory industrial plant service, Liberty Mutual Insurance Co. A glance at the chart with this article shows that the machine room with its winders and supercalenders is the predominant problem area in safety.

A prime danger time is during paper machine breaks and the attendant confusion. You can't expect people to stop and think at such a time, said Mr. Faulkner. Particularly dangerous are the winder and rewinder nips; feeling web tension; turning or feeling felts; and calenders with no footholds (solution: increase width of step, put in good handholds).

In case after case involving high cost accidents, stressed Mr. Faulkner, someone finds a way to guard the danger spot *after* the accident. Typical statement on accident reports: we have now provided a guard. The accident cost $65,000, the guard, $25.

Thomas J. Cleland, director of industrial relations and safety, Fibre Box Assn., cited four frustrations encountered by the safety director in his concern for those who do very little safety. (1) Top management doesn't care; (2) "We have too small a plant to be bothering about safety; (3) "It's more costly to promote safety because you don't pay any less or save on premiums"; and (4) "People are not interested in safety."

Luke on Safety

Keynoter David L. Luke, president, West Virginia Pulp and Paper Co., called for a fresh approach to safety merchandising.

"There have been many attempts to explain the spectacular performance of these United States," said Mr. Luke. "Some say that we've done so well because we've had such rich resources. Brazil has had just as rich resources. Some say that we have a wonderful combination of resources and climate. Brazil has ideal climate to match with her riches in resources. Some say that we've been unusually successful because of the incentives of the free enterprise system, but others point out that perhaps our greatest growth occurred during those twenty years of the New Deal when the free enterprise system was bedeviled by high taxes and shackled by controls.

"Some say that we're the product of a highly competitive system, based on early experiences in the field of competitive sport, or, on the other hand, the result of the anti-trust laws. I feel sure that all of these elements have contributed to the great success of our nation.

"There's another aspect which I suspect may also have contributed.

"We're known primarily as that nation which has developed mass production. We should be better known as that nation which developed mass markets. Certainly everyone recognizes that the market must create the demand. It's too easy to imagine the futility of mass production without a mass market.

"Not so often is it recognized that advertising created the mass market, and that in reality advertising has created our mass production.

Plug for Advertising

"Not so often is it recognized that the advertiser of these United States has been the pioneer researcher in the social sciences. Too often is the advertiser belittled as the Madison Avenue huckster, too seldom is his creative capacity given recognition. Too seldom is it recognized that more often than not the huckster's antics are based on careful researches into the needs and desires of the only real purchasing agents in the world—our wives.

"I have a hunch that more advertising, based on inspired and thorough research, could develop mass markets for the product we want to sell—safety—just as it has developed mass markets for the gross national product of these United States.

Race ..... Jones ..... Luke ..... Heitzmann

PUTTING A PERSONAL TOUCH to top management's interest in safety, David L. Luke, president, West Virginia Pulp and Paper Co., tosses a few ideas of his own on safety merchandising at safety meeting in New York City. From left are Merlin C. Race, safety director, St. Regis Paper Co., James E. Jones, secretary, industrial relations committee, APPA, Mr. Luke and Robert Heitzmann, asst. mgr., National Council on Compensation.

SAFETY

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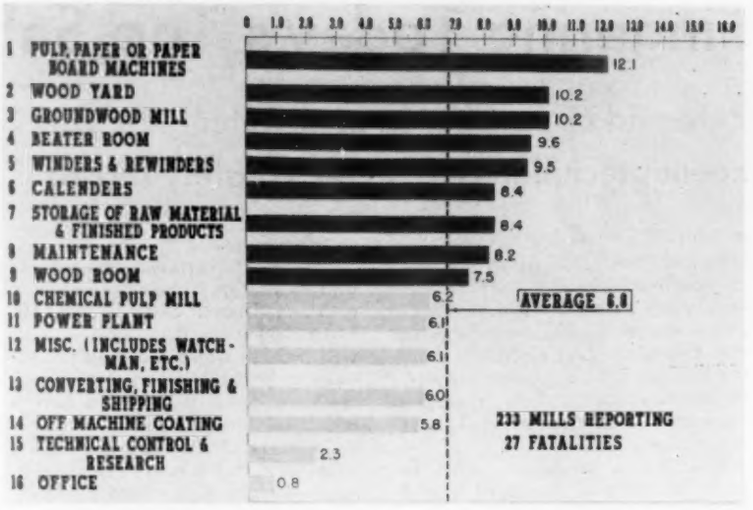
Potential in Social Research

"The field of social research may have—it *really* may have the greatest potential of all. Its potential may be greatest because so little has been done. On the other hand, it may be greatest because it deals with people—those we work with, and the families we live with. I'm sure that we all recognize, when we stop to think that all research is done by people, that it's all done for people—that most of our troubles, as well as most of our happiness, comes from people.

"I'm thinking of such mundane things as the famous Hawthorne Experiment. Western Electric, at Hawthorne, improved the lighting of the factory. Productivity of the workers went up. They improved it again, and productivity again went up. Elton Mayo was behind these changes. He suggested that they try dimming the lights, and believe it or not, productivity bounced again. He'd proved his point, which was that productivity went up because management was showing an active interest in the employees. Had safety been an included objective, this record would have also responded to each change.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3 GROUNDWOOD MILL 10.2
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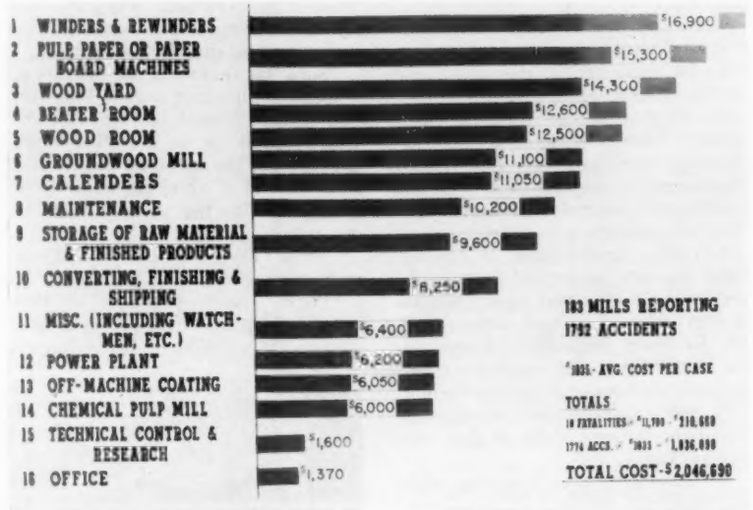
10 CHEMICAL PULP MILL 6.2
11 POWER PLANT 6.1
12 MISC. (INCLUDES WATCHMAN, ETC.) 6.1
13 CONVERTING, FINISHING & SHIPPING 6.0
14 OFF MACHINE COATING 5.8
15 TECHNICAL CONTROL & RESEARCH 2.3
16 OFFICE 0.8
AVERAGE 6.8
233 MILLS REPORTING
27 FATALITIES

AREAS OF GREATEST DANGER, as shown by chart of injury frequency rate for 1958, are in machine room and woodyard.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8 MAINTENANCE $10,200
9 STORAGE OF RAW MATERIAL & FINISHED PRODUCTS $9,600
10 CONVERTING, FINISHING & SHIPPING $8,250
11 MISC. (INCLUDING WATCHMEN, ETC.) $6,400
12 POWER PLANT $6,200
13 OFF-MACHINE COATING $6,050
14 CHEMICAL PULP MILL $6,000
15 TECHNICAL CONTROL & RESEARCH $1,600
16 OFFICE $1,370
183 MILLS REPORTING
1782 ACCIDENTS
TOTALS
TOTAL COST-$2,046,690

MOST COSTLY ACCIDENTS are at winders and rewinders, machine room and woodyard, according to loss rates for accidents per million manhours.

The Safety Challenge

"The National Safety Council estimates that in 1957 work injuries cost the nation a total of $4 billion:

"It seems to me that this is a grand time at which to contemplate the challenge, and take on the job. Our industry has grown at a fabulous rate. We've currently in the process of absorbing some overenthusiasm—the projections would indicate that it will be another three—five years at least before there can be further justification for significant increase in physical plant.

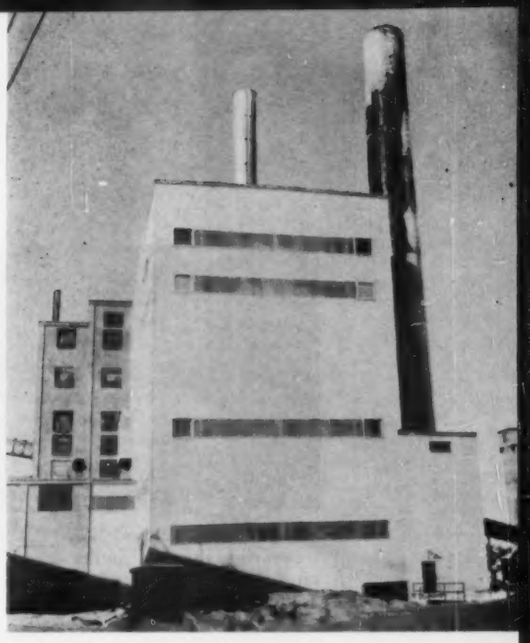
"It's during this period of lull in physical growth that we have the greatest opportunity to study, organize, and improve our efforts in safety. During the period of production lull we can better persuade our operators to bring the left arm into the swing—to hit hard in the area of safety—and to achieve a great acceleration in the reduction of both frequency and severity rates.

"Projected growth of the future demands, if not fairly screams, that in order to accommodate the over-all challenge—social, and technological, production, and safety—we must improve all our abilities—the job calls for research," concluded Mr. Luke.

END

Dual-Purpose Furnace

KVP at Espanola puts $2,000,000 recovery unit into operation, precipitator location "unique"



FURNACE INSTALLATION is housed in six-story structural steel building with outer walls of Galbestos. Windows are of fiberglass.

• KVP Co. Ltd.'s new recovery furnace at its Espanola, Ont. mill serves two purposes: (1) to provide means of recovering spent chemicals from the black liquor, and (2) to serve as a steam generator by burning out organic matter.

Plant construction was undertaken in May 1958 by Dominion Bridge Co. Ltd., the first pressure test was made in September, and the unit is now in full operation. The complete furnace installation is housed on the six floors of a structural steel building with outer walls of Galbestos, a coated sheet metal. Windows are of fiberglass.

The project was completed at a cost of $2,000,000 and boasts a new spray type Combustion Engineering Inc. furnace operating at 235 psi. A maximum of 650 psi is available for possible future use with steam turbo power.

Precipitator Location Unique

Working in conjunction with the furnace is a precipitator installed by Precipitation Co. of Canada Ltd. The unit recovers salt cake that would otherwise be carried out on the flue gases. Recovered chemicals are removed by a drag chain. The unit handles some 121,000 cfm gas at 300° F.

According to J. H. McKibbon of Precipitation Co. of Canada, the location of the precipitator is "somewhat unique as far as most installations in Canada are concerned." Exhaust gases from the disc evaporator take off vertically into a common inlet plenum chamber for the two-unit precipitator. A common outlet plenum chamber is included, and the gases leave the top of this chamber directly into the induced draft fan. The precipitator is of mild steel shell construction.

Salt Cake Removal Smooth

Although performance tests have not as yet been completed, it has been reported that removal of salt cake is "extremely smooth, with no difficulty of any kind experienced."

Among other features that set this installation apart are the flue and damper arrangement, the uses of Transistomatic automatic precipitator controls and the fin plate electrodes with electric rappers.

The installation—above and to the rear of the evaporator—consists of two separate parallel units in one housing having three separate electrical connections in the direction of gas flow. The unit includes full-width inlet and outlet plenum chambers incorporating multivane dampers to provide equal distribution of gases and eliminate turning vanes and perforated plates in the inlet flues. This minimizes salt cake build-up and permits isolation of either unit for on-stream maintenance.

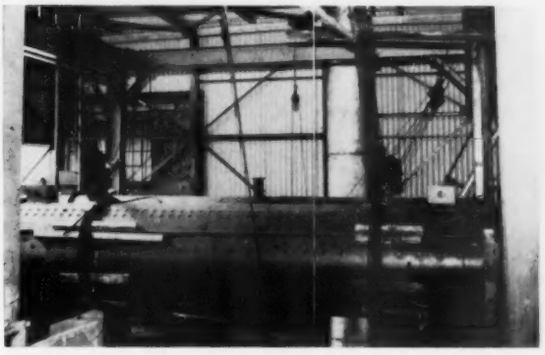
The flat bottom drag conveyor system is housed in a tile-lined concrete enclosure. It discharges into stainless steel sluice boxes equipped with ribbon type agitators, which prevent blockage if lumpy material enters the slightly inclined return black liquor line.

Transformer-rectifier units are located adjacent to the precipitator at the operating floor level. Rappers for collecting electrodes are of the side-mounted electric type and for the discharge system are of the top-mounted pneumatic type.

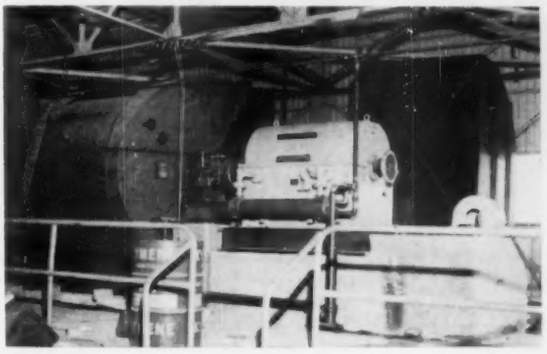
The discharge electrode system incorporates mild steel wires and weights, while the collecting electrode system incorporates the new fin plate

J. F. McCALLUM, KVP res. engineer.

J. V. HANNA, engineer in charge.



BOILER DRUMS ARE PLACED on the top floor of the Espanola plant. The new spray type furnace is operating at 235 psi. Total of 650 psi is available for future use.



PORTION OF POWER SECTION for the precipitator, working in conjunction with the new furnace. The unit recovers the salt cake otherwise carried out on flue gases.

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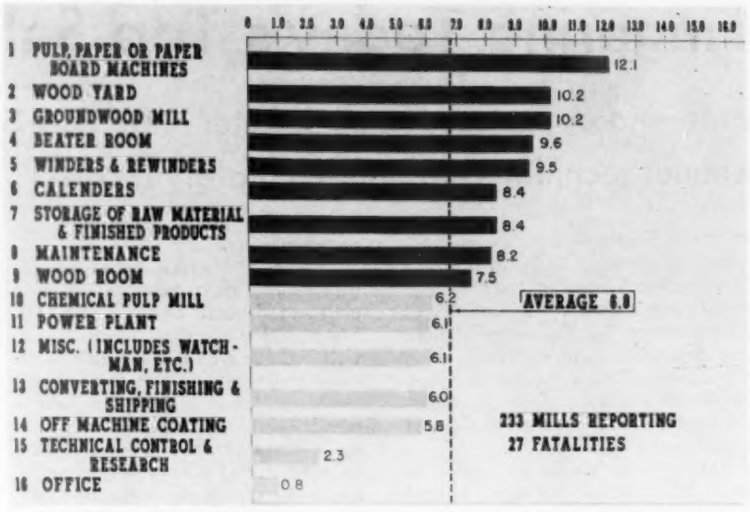
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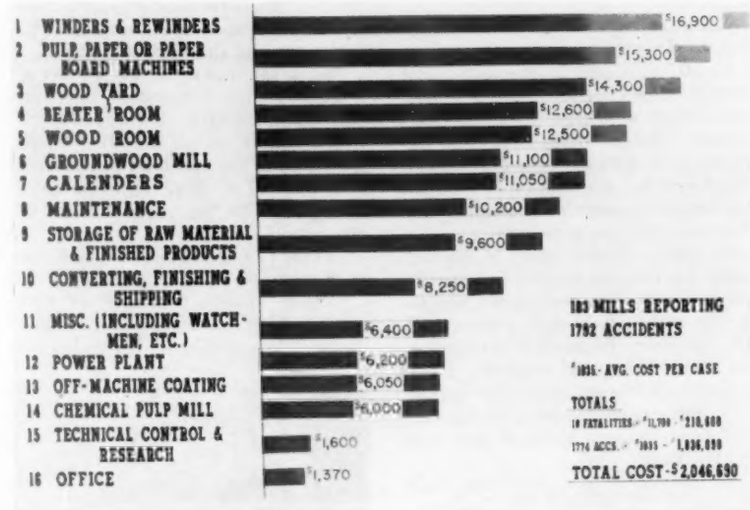
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8 MAINTENANCE $10,200
9 STORAGE OF RAW MATERIAL & FINISHED PRODUCTS $9,600
10 CONVERTING, FINISHING & SHIPPING $8,250
11 MISC. (INCLUDING WATCHMEN, ETC.) $6,400
12 POWER PLANT $6,200
13 OFF-MACHINE COATING $6,050
14 CHEMICAL PULP MILL $6,000
15 TECHNICAL CONTROL & RESEARCH $1,600
16 OFFICE $1,370
183 MILLS REPORTING
1792 ACCIDENTS
$1936 AVG. COST PER CASE
TOTALS
10 FATALITIES - $11,700 - $210,000
1774 ACCS. - $1035 - $1,836,690
TOTAL COST - $2,046,690

MOST COSTLY ACCIDENTS are at winders and rewinders, machine room and woodyard, according to loss rates for accidents per million manhours.

The Safety Challenge

"The National Safety Council estimates that in 1957 work injuries cost the nation a total of $4 billion:

"It seems to me that this is a grand time at which to contemplate the challenge, and take on the job. Our industry has grown at a fabulous rate. We've currently in the process of absorbing some overenthusiasm—the projections would indicate that it will be another three—five years at least before there can be further justification for significant increase in physical plant.

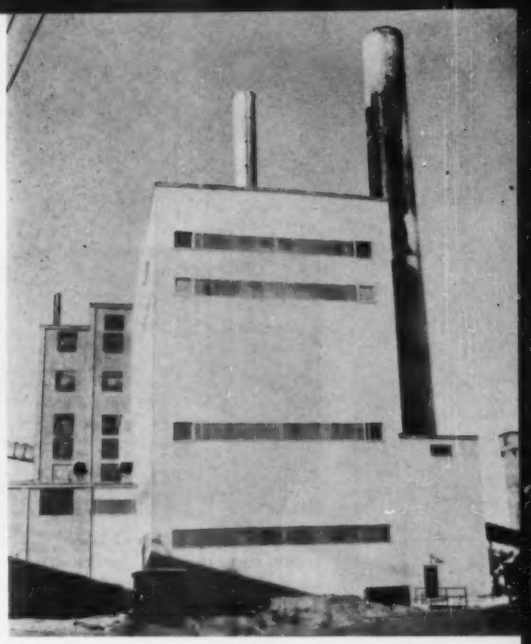
"It's during this period of lull in physical growth that we have the greatest opportunity to study, organize, and improve our efforts in safety. During the period of production lull we can better persuade our operators to bring the left arm into the swing—to hit hard in the area of safety—and to achieve a great acceleration in the reduction of both frequency and severity rates.

"Projected growth of the future demands, if not fairly screams, that in order to accommodate the over-all challenge—social, and technological, production, and safety—we must improve all our abilities—the job calls for research," concluded Mr. Luke.

END

Dual-Purpose Furnace

KVP at Espanola puts $2,000,000 recovery unit into operation, precipitator location "unique"



FURNACE INSTALLATION is housed in six-story structural steel building with outer walls of Galbestos. Windows are of fiberglass.

• KVP Co. Ltd.'s new recovery furnace at its Espanola, Ont. mill serves two purposes: (1) to provide means of recovering spent chemicals from the black liquor, and (2) to serve as a steam generator by burning out organic matter.

Plant construction was undertaken in May 1958 by Dominion Bridge Co. Ltd., the first pressure test was made in September, and the unit is now in full operation. The complete furnace installation is housed on the six floors of a structural steel building with outer walls of Galbestos, a coated sheet metal. Windows are of fiberglass.

The project was completed at a cost of $2,000,000 and boasts a new spray type Combustion Engineering Inc. furnace operating at 235 psi. A maximum of 650 psi is available for possible future use with steam turbo power.

Precipitator Location Unique

Working in conjunction with the furnace is a precipitator installed by Precipitation Co. of Canada Ltd. The unit recovers salt cake that would otherwise be carried out on the flue gases. Recovered chemicals are removed by a drag chain. The unit handles some 121,000 cfm gas at 300° F.

According to J. H. McKibbon of Precipitation Co. of Canada, the location of the precipitator is "somewhat unique as far as most installations in Canada are concerned." Exhaust gases from the disc evaporator take off vertically into a common inlet plenum chamber for the two-unit precipitator. A common outlet plenum chamber is included, and the gases leave the top of this chamber directly into the induced draft fan. The precipitator is of mild steel shell construction.

Salt Cake Removal Smooth

Although performance tests have not as yet been completed, it has been reported that removal of salt cake is "extremely smooth, with no difficulty of any kind experienced."

Among other features that set this installation apart are the flue and damper arrangement, the uses of Transistomatic automatic precipitator controls and the fin plate electrodes with electric rappers.

The installation—above and to the rear of the evaporator—consists of two separate parallel units in one housing having three separate electrical connections in the direction of gas flow. The unit includes full-width inlet and outlet plenum chambers incorporating multivane dampers to provide equal distribution of gases and eliminate turning vanes and perforated plates in the inlet flues. This minimizes salt cake build-up and permits isolation of either unit for on-stream maintenance.

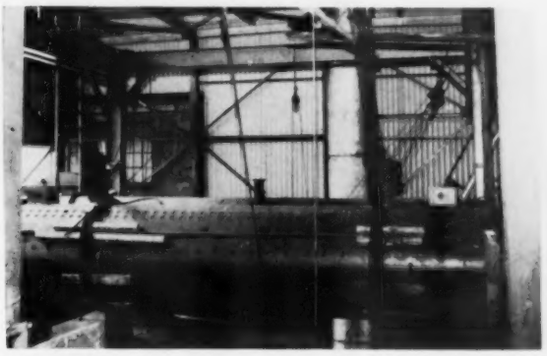
The flat bottom drag conveyor system is housed in a tile-lined concrete enclosure. It discharges into stainless steel sluice boxes equipped with ribbon type agitators, which prevent blockage if lumpy material enters the slightly inclined return black liquor line.

Transformer-rectifier units are located adjacent to the precipitator at the operating floor level. Rappers for collecting electrodes are of the side-mounted electric type and for the discharge system are of the top-mounted pneumatic type.

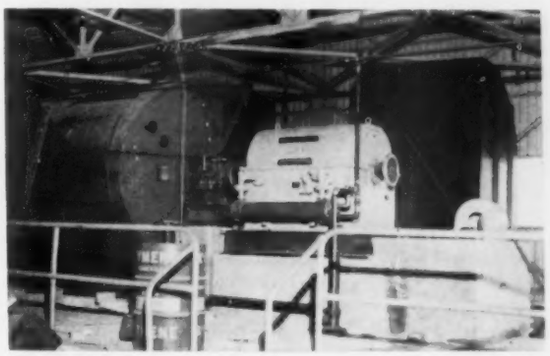
The discharge electrode system incorporates mild steel wires and weights, while the collecting electrode system incorporates the new fin plate

J. F. McCALLUM, KVP res. engineer.

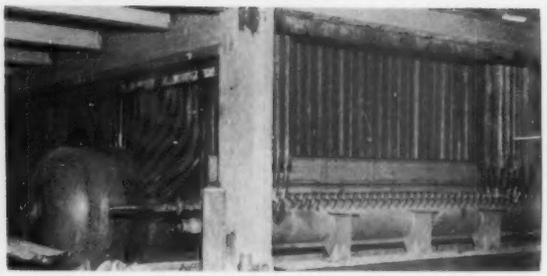
J. V. HANNA, engineer in charge.



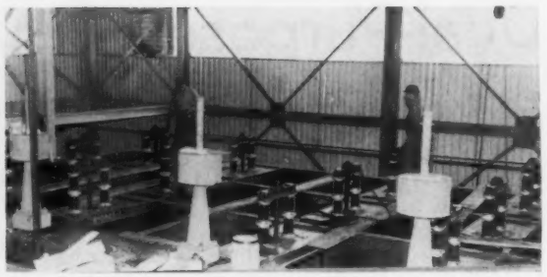
BOILER DRUMS ARE PLACED on the top floor of the Espanola plant. The new spray type furnace is operating at 235 psi. Total of 650 psi is available for future use.



PORTION OF POWER SECTION for the precipitator, working in conjunction with the new furnace. The unit recovers the salt cake otherwise carried out on flue gases.



THIRD FLOOR VIEW SHOWS ECONOMIZER (extreme right) and the boiler drum. The furnace is operating on a seven-day week. Steam output is increased by some 1,500,000 lb. every 24 hr.



THE THREE DAMPER-OPERATING MECHANISMS on the precipitator floor. The recovered chemicals are removed from the precipitator by a drag chain. The unit handles some 121,000 cfm gas at 300° F.

design wherein the projecting ribs on the solid steel curtains retard re-entrainment and supply approximately 40% more effective collecting area per running foot than is obtained with flat plates or rod curtain designs.

The electrode systems are said to have been rapping very cleanly. An extremely white salt cake has been recovered with no black liquor carry-over.

The project was undertaken by J. F. McCallum, KVP resident engineer. The engineer-in-charge was J. V. Hanna. KVP had this to say about the undertaking: "This is another fine example of complete cooperation between the various planning, construction, supply and accounting departments to final execution of all the detailed predetermined plans."

New Era Begins at CZ Paper School

. . . as Camas' famed "college" graduates its 26th class. Two divisions now separate general and technical instruction.

● The Crown Zellerbach Paper School at Camas, Wash., has awarded its 531st diploma. The parchment signifies completion of a four-year course.

This unique industrial school—at which graduation exercises were held recently for the 26th year—is conducted by Crown Zellerbach Corp. for the exclusive enrollment of employes interested in learning more about the industry they have chosen for a career.

The school has the distinction of providing its students opportunity to work for their bachelor degrees while gainfully employed full-time at any of several CZ divisions and affiliates in southern Washington and northern Oregon. And for many years both Oregon State College and the Univ. of Washington have extended official

Dupuis ..... Strand ..... Butler ..... Boylon ..... Thieme ..... Otis

CONGRATULATIONS to graduates are given by F. O. Boylon, res. mgr., Camas div., at CZ Paper School graduation. Seated are R. A. Dupuis, res. mgr., St. Helens div.; Dr. A. L. Strand, president of Oregon State College; R. A. Butler, Camas asst. res. mgr. and a director of the school; Dr. F. P. Thieme, U. of Washington provost; and M. J. Otis, West Linn div. mgr.

Semke ..... Otis

DIPLOMAS to fourth-year graduates and honor awards are presented by M. J. Otis, also a regent of the school. Assisting him is L. E. Semke, development chemical engineer.

recognition. Students meeting entrance requirements at the college or university are granted full credit, applicable to obtaining their degree, for work done at the paper school.

Modestly founded as a study group in 1933, the school soon became a full-fledged institution for higher learning in papermaking and has continued to grow in size and academic stature. Until this year, graduation exercises were held for students of each class. Every qualifying student was awarded a class certificate or, for fourth-year graduates, a diploma.

During the early years all four classes were annually accommodated at a single graduation ceremony. When the enrollment increased to the point that available meeting facilities were inadequate for such a large group, two sessions became necessary. Graduation exercises for the first- and second-year students were held one night, another for third- and fourth-year students the next.

Academic Improvement

This arrangement was changed this year as the result of continuous improvement in the school program. Essentially, the modifications involve further upgrading to more effectively carry out educational objectives, according to R. A. Butler, asst. res. mgr. of the Crown Zellerbach Camas div. and a director of the school. Although the school's basic plan has always been based on broad, general curricula for the first- and second-year classes and more technical curricula for the two upper classes, this cleavage has become more pronounced by forming distinct divisions—general and technical.

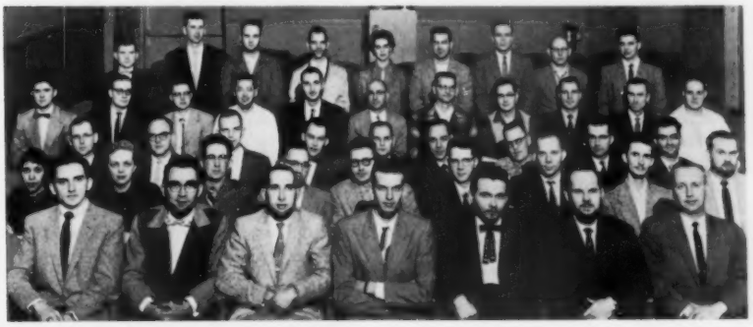
Fourth-Year Class Picture (l to r)

First Row: Robert F. Cameron, Richard M. Sawyer, Hugh Gittings, Frank S. Payne (Portland office), Melvin G. Scharringhausen (Portland office), H. John Ballo, Delmer D. Hinrichs, Claire M. Beeler (Western Transportation Co.).

Second Row: Virgil Wellborn (St. Helens), Edward L. Deal (St. Helens), William T. Jessett, Roland L. Sundstrom, John G. Finel, Richard D. Howell Jr. (West Linn), Curtis J. McKinnie (Western Waxide), Donald L. Kirkpatrick, Alan P. Anderson, Leland A. Kelson, Joseph P. Blaschka.

Third Row: Marvin P. Foster, Donald F. Dunn, Roland W. Mohning (West Linn), Byron D. Lewis (West Linn), John W. Anderson, Laurence W. Altree (Western Transportation), James K. Howell (Western Waxide), Donald A. Christianson (West Linn), Roy E. Snell (Western Transportation), George E. Stevenson (Western Transportation), William D. Lauritzen (St. Helens), Jerald A. Crippen (St. Helens), Robert A. Little.

Not in Picture: Max W. Brower, Donald Holden (West Linn), Henry D. Marquis (West Linn).



Second-Year Class Picture (l to r)

First Row: Archie E. McLeod (West Linn), Olen V. Jamison (West Linn), Dale D. Tiedtke (West Linn), Charles W. Walstrom Jr. (West Linn), Roger L. Bouse (West Linn), Robert L. Wright (Western Transportation Co.), William W. Bergren (audit).

Second Row: Florence M. Powers, Virginia J. Harris, Rayford C. Sly (veneer plant), Edward L. Sullivan, Elmer J. Turja, Boyd Tiffany, John Prutsman (Western Waxide), Raymond D. Miller (Western Waxide), Richard E. Westby (Western Waxide).

Third Row: Edward G. Ellenberger, Richard L. Carlson, Don E. Abrahamsen, Laurie E. Bedell, James E. Repman, James T. Drum (Portland office), Charles E. Hoonan (Portland Office), Leslie A. Olson (Portland office), Norman F. Minden (Portland office).

Fourth Row: Edward H. Grassel, Ivar Bergmann, Robert W. Fowells, John L. Seibert (Western Waxide), Kenneth E. Harding (Western Waxide), Clarence J. Welinski, Lester R. Sonneson, James F. Cormack Lyle J. Gross, Ernest A. Stewart, Maurice D. Hitchcock.

Fifth Row: Louis W. Wilson Jr. (St. Helens), Nicholas Wizinsky, Bill J. Robinson (St. Helens), John Goetz (Western Waxide), Betty M. Anderegg (Western Waxide), Derald D. Robertson, Norman L. Riley (St. Helens), Kenneth B. Lund (St. Helens), Raymond A. Williams.

Not in Picture: Barbara F. Loehr, Hans A. Schelke, Pell V. Voorheis, Dale A. Heisler (West Linn), Edmond C. Mead (West Linn), James A. Nutt (West Linn), Gene S. Patrick (West Linn), David A. Holland (Western Waxide).

Each of the 531 fourth-year graduates in the school's 26-year history has successfully completed all four classes. Heretofore it had been necessary to enter at the first-year level and progressively move up to the next class one year at a time. Effective with the start of the recent school year, graduation ceremonies are now held for students graduating from each division—second-year students graduating from their general, basic division; fourth-year students from the advanced division.

One of the changes in the program makes it possible for a prospective student to directly enter the advanced division. An individual can, by entrance examinations, now start in the third-year class, which some did this year for the first time.

This provision enables men (women can enroll for the first and second year) having a good acquaintance with the industry—through education, work experience or both—to enroll for the more technical division without having devoted two years to basic courses.

For Grads: a Bright Future

Mr. Butler, who presided as chairman at the recent second-fourth-year graduation, pointed to this fourth-year class as the last in which its members will necessarily have attended four full years. As to "what has become of previous graduates," he says many have maintained their initiative, and many have progressed into foremanships and supervisory positions. Of this year's student body, approxi-

Fourth-Year Honor Students

. . . win expense-paid trip to northern mills (l to r): Edward L. Deal (St. Helens), Ronald W. Mohning (West Linn), Leland A. Kelson (Camas honor award student four consecutive years), Ronald L. Sundstrom (Camas) Curtis J. McKinnie (Western Waxide).

Second-Year Awards

. . . go to James T. Dunn (Portland office) and Lyle J. Gross (Camas central research). The prize: the three-volume "Pulp and Paper Manufacture."

Other Scholastic Awards

. . . are now confined to (1) highest average and (2) outstanding achievement earned by students in the first and third years. This the result of segregating the four-year curriculum into upper and lower divisions. Only top students in the second and third years are eligible for honor awards.
Third-year class students with highest grade averages were JOHN WOCASEK and TERENCE L. GIRVAN (both of Camas), tied for first place; JAMES H. BAXTER (West Linn), and HUBERT E. FRANSON (St. Helens). Selected for outstanding achievement were: FLOYD E. J. BLAIR (Camas); HAROLD G. FROESCHER (West Linn), and WILLIAM P. GOSLAND (St. Helens).
First-year student with highest average was JAMES A. LEITH (Camas); honored for outstanding achievement was Miss YVONNE N. IRVING (Portland office).

mately half had had college training.

F. O. Boylon, res. mgr. of the big CZ Camas mill and a regent of the school, extended official welcome to members of the two graduating classes. Urging the students to keep learning, he said, "most of the things to be learned are unknown at the end of a person's formal education." Relating directly to the industry, he pointed out that many of today's production techniques and refinements have been developed in the past few years.

Training and preparation for a scientific career were discussed by Dr. F. P. Thieme, provost of the University of Washington. He emphasized the fact that "we are now in a technical race we cannot afford not to run." An effect of the "race" has been a spreading out of educational functions. The speaker reported that "irregular" students outnumber regular on-campus students at the university, a factor characteristic of today's educational field.

"A Way of Finding Out"

Dr. Thieme called attention to the fact that man has undergone no real evolutionary improvement during the era of recorded history. The phenomonal accomplishments that have been achieved are the result of the scientific approach. Science, he defines, is "a way of finding out—not what is found out."

During the school's 26 active years there have been 4,381 certificates and diplomas awarded to graduating students—1,929 from first-year, 1,221 from second-year, 699 from third-year, 531 from fourth-year.

This year's student body, consisting of all four classes, includes 83 employes from Camas, 37 from the West Linn div., 22 from the St. Helens div., 16 from Western-Waxide, nine from the Portland office, three from Waterway Terminals Co., nine from regional accounting, five from Western Transportation Co., and one from Crown Zellerbach's St. Helens veneer plant—a total of 185.

Each of the students graduating from the fourth-year class was awarded, in addition to his diploma, a copy of "Making Paper"—the school's 700-page text book authorized by CZ personnel and now in its third edition—and a two-year subscription to PULP & PAPER magazine.

The Administration

The following regents are top administrators of the Crown Zellerbach Paper School:

R. O. Hunt, CZ exec. vice pres., San Francisco; F. O. Boylon, and M. J. Otis, res. mgr. of the West Linn div. Local school functions are headed jointly by R. A. Butler and W. M. Hearon, gen mgr. of the Chemical Products div., Camas.

Other staff members (from Camas unless otherwise stated) are:

Fourth-year class administrator, M. R. River, gen. supervisor for steam power and operation; *fourth-year asst. administrator*, E. McCourt, paper machines shift foreman, wrapping; *third-year administrator*, Russ Lawton, division industrial engineer; *third-year asst. administrator*, H. L. Ostenson, asst. paper mill supt., tissue; *second-year administrator*, W. L. Rich, head inspector, bag factory; *second-year asst. administrator*, F. T. Dowdy, asst. supervisor, mill purchases; *first-year administrator*, R. G. Stewart, asst. sulfite mill supt.; *first-year asst. administrator*, C. W. Davidson, technical supervisor.

Other asst. administrators include: W. F. Cyrus, asst. technical control supervisor, West Linn div.; K. F. Byington, group leader for production control (pulp), West Linn; L. Burton Zurcher, technical asst. to the paper machine asst. supt., St. Helens, and F. H. Terrall, industrial engineer, St. Helens. Administrative asst. is L. E. Semke, development chemical engineer; his assistant is C. T. DeVoe, inspector in maintenance and control; Leona Blair is supervisor of the stenographic dept.

Dr. Grondal Honored

"Generous support and cooperation" over the past 26 years has won for Dr. Bror L. Grondal the warm appreciation of the staff at the CZ Paper School. The following special tribute to the Univ. of Washington faculty member appeared in the program for the recent Camas graduation exercises:

"We wish to express our heartfelt thanks for his guiding and counseling in the paper school's formative years, for the many trips from Seattle and the tremendous amount of time spent in assisting and lecturing to our students, and for his interest and cooperation in our behalf."

Dr. Grondal, professor in the College of Forestry, is retiring later this year after more than 40 years on the staff of the university.

Name Change (?) at Houston Is Big Question for Supts.

● The challenge of the future will set the tempo at the forthcoming 40th annual convention of the American Pulp & Paper Mill Superintendents Assn. Chances are that the Houston, Texas meeting will see the "death" of the APPMSA, the rebirth of the group as the Paper Industry Management Assn.

One of the highlights of the June 2-4 meeting at the Shamrock Hilton Hotel will be an address by Howard E. Whitaker, board chairman of the Mead Corp., Dayton, Ohio, who will point up the ever-growing roll of the superintendent in the field of marketing. As first vice pres. of the American Paper & Pulp Assn., Mr. Whitaker pinpoints the industry's problems, is ready with the clear and concise analysis that hastens solution.

Presiding at the 1959 session of APPMSA will be Pres. Howard E. Wehr, manager of Mead's Harriman (Tenn.) div. It will be during the Houston meeting that he will officially present the gavel of his office to First Vice Pres. Adolph Charles ("Ace") McCorry, a veteran in the manufacture of pulp and paper since 1926. Mr. McCorry is market wood pulp representative for the Kraft Pulp div. of St. Regis Paper Co., Tacoma, Wash.

Needed: "Engineering Thinking"

Spearheading the drive for the new name at last year's Boston gathering was Albert E. Bachmann, then president of APPMSA, who had this to say, "we need engineering thinking in management. PIMA will provide the means to discuss mill problems and the management of people." The suggested name change, together with a constitutional amendment reorienting the association along lines outlined by Mr. Bachmann (president of both Missisquoi Corp. and Fonda Container Co.), will be up for vote at the Houston business meeting.

Headline Speakers Scheduled

Important to "The Paper Industry Challenge" is personnel relations, and this aspect of mill operations will come under close scrutiny at a group meeting set for the afternoon of June 3. Presiding will be APPMSA Fifth Vice Pres. Glen T. Renegar, mill mgr. for Container Corp. of America, Philadelphia.

Speakers at the session will be L. S. Menius, personnel director for East Texas Pulp & Paper Co.; Ralph F. Caldwell, industrial relations mgr. for the Forest Products div., Olin Mathieson Chemical Corp., and Ralph Vernon, section engineer for Liberty Mutual Insurance Co.

Other featured speakers scheduled for the three-day Shamrock Hilton convention will be: J. G. Donohoo, Mead Containers Inc.; Kenneth P. Chamberlain, Industrial Plastic Fabricators Inc.; Edward McFaul, Chicago educator prominent in the fields of personnel management and sales; and Wesley Wikesell, professor of speech at Louisiana State Univ.

Visits, Social Program

Mill tour scheduled for the 1959 convention is to be to the plant of Champion Paper & Fibre Co. at Pasadena.

Group meetings will discuss Pulp, Fine Papers, Paperboard, Linerboard and Converting. And social activities will include the annual Wake 'Em Up Breakfast, Get-Together Party, banquet and dance.

THE SUMMING UP: Howard E. Whitaker, board chairman of the Mead Corp., will address the concluding general conference of the Houston meeting. His subject: "The Role of the Superintendent in Marketing Our Products."

McCorry ..... Coldewey

TOP MEN FOR 1959-60: President A. C. ("Ace") McCorry of St. Regis and First Vice Pres. Tom S. Coldewey, vice pres. of St. Joe Paper Co.

St. Regis' 23-Year Vet

Set for the 1959-60 presidency of APPMSA (or PIMA?), Mr. McCorry is a native of Green Bay, Wis. He went to work in the old kraft mill in Ontonagon, Mich., at the age of 19 and two years later joined the staff of Longview Fibre Co., Longview, Wash. He came to St. Regis at Tacoma in 1936 as tour foreman, moved up to pulp supt. in 1944. Following assignment at Hinton, Alta., where he was in charge of start-up and operations, he returned to Tacoma as market wood pulp representative.

National Headquarters Moved

The Superintendents Assn. has announced that its national headquarters in Chicago has been moved from 327 S. LaSalle St. to 10 N. Clark St., Chicago 2. The address change became effective May 1, according to Harry E. Weston, sec. and treas.

Italian TAPPI Members Visit U.S. Mills

About 28 members of the new Italian Section of TAPPI (U.S.A.) have recently been making a tour of pulp and paper mills here.

The visitors' itinerary took in the TAPPI Coating Conference in Boston, Mass., May 25-27. Also included in their plans was a tour of the Beloit, Wis. plant of Beloit Iron Works.

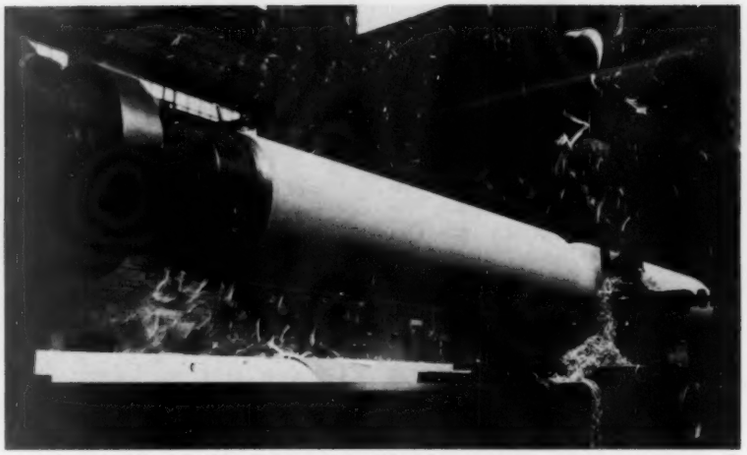
New England and Southeastern mills on the itinerary were: Riegel Paper Corp. Co., Milford, N. J., St. Regis Paper Co., Jacksonville, Fla.; Union Bag-Camp Paper Corp., Savannah, Ga.; Bowaters Southern Paper Corp., Calhoun, Tenn.; S. D. Warren Co., Cumberland Mills, Maine; Great Northern Paper Co., Millinocket, Maine, and Oxford Paper Co. Inc., Lawrence, Mass.

Name Change for Mersey

Bowaters Mersey Paper Co. Ltd. is the new name of Mersey Paper Co. Ltd., Liverpool, Nova Scotia, Canada.

This modern newsprint plant with a daily output of nearly 500 tons became part of the Bowaters Organization in 1956. Some 80% of its output is sold on long-term contracts to the United States.

Refilling Rolls



COTTON FILLING SHOWERS THE SHOP as a lathing tool cuts into the roll and releases tons of pressure. At Appleton Machine roll reworking is a major undertaking.

● Roll refilling is one of the few paper industry operations that perpetuates itself. At Appleton Machine Co.—now celebrating its Diamond Jubilee—it is a major undertaking.

Following several resurfacings at the paper mill, a cotton-filled roll reaches the point where refilling is prescribed, and back to the shop it goes—in this case, to Appleton Machine, Appleton, Wis. There, it is reworked so that its condition is perfect, its surface free of marks and blemishes and completely smooth.

Reworking at the Wisconsin plant is a step-by-step operation.

1. Stripping and Cleaning

When a roll is returned for refilling, the old material is stripped from the shaft by cutting into it on a lathe. With the aid of calipers, the operator knows within seconds just when the roll will "let go." Tremendous pressure holds the old filling material in place, and when released the cotton showers over the room with explosive force.

When the "captive" cotton has at last been freed, the remaining filling can be stripped from the shaft by one man in a matter of minutes.

The entire shaft is then cleaned and burnished with a vibrating sander, the journals refurbished and the heads usually replaced.

2. Filling and Smoothing

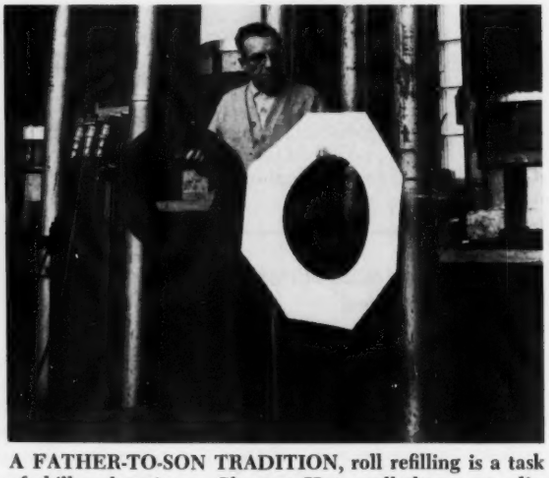
In the meantime, thousands of cotton fiber "donuts" have been prepared. These are fitted over the shaft and the shaft placed in a press for "loading." Tons of hydraulic pressure squeeze the layers of cotton fiber material together, and finally the newly-filled roll is removed from the press and returned to the lathing operation. It is here that the rough roll is lathed.

3. The Finishing Touch

Finally, the journals are painted with rust-resistant enamels and the heads and nuts lacquered. It is at this point that "it takes an experienced eye to tell the difference between a brand new roll and one that's been refilled. From a performance standpoint," according to Appleton engineers, "there's absolutely no difference."

The roll shop at Appleton Machine boasts a variety of presses—including the world's largest, a 33-ft. high giant capable of exerting 3,500 tons of hydraulic pressure. These presses handle rolls of almost every size—from those of 4-in. dia. with 4-in. face to the real heavyweight boasting diameters of 30 in. with a 330-in. face.

◄ **WITH PRESSURE RELEASED, one man can finish the stripping operation in a few minutes. This roll, resurfaced several times at the paper mill, is now in for a major overhaul.**



A FATHER-TO-SON TRADITION, roll refilling is a task of skill and patience. Clarence Horn, roll shop supt., displays examples of roll-refilling material ("donuts").

we're close to the paper industry in more ways than one!

The map tells you at a glance how well we're situated to give you *fast service* from nearby laboratories and warehouses when you want help in matching shades or same-day shipment of a needed dye.

But it doesn't show how close to your day-to-day operating problems we really are!

Regular customers may have noted, for instance, that the formulations we suggest are more than good, economical working formulas. *Wherever possible they're based on dyes we know you have on hand!* Many mills tell us this regularly saves them dollars in inventory.

This important service extra is indicative of the friendly, helpful relationship we maintain with all of our customers. It's one more reason why National Paper Dye service . . . developed by long experience . . . can't be beat. One more reason why it always pays to call National Aniline.

NATIONAL ANILINE DIVISION
40 RECTOR STREET, NEW YORK 6, N. Y.
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Allied Chemical

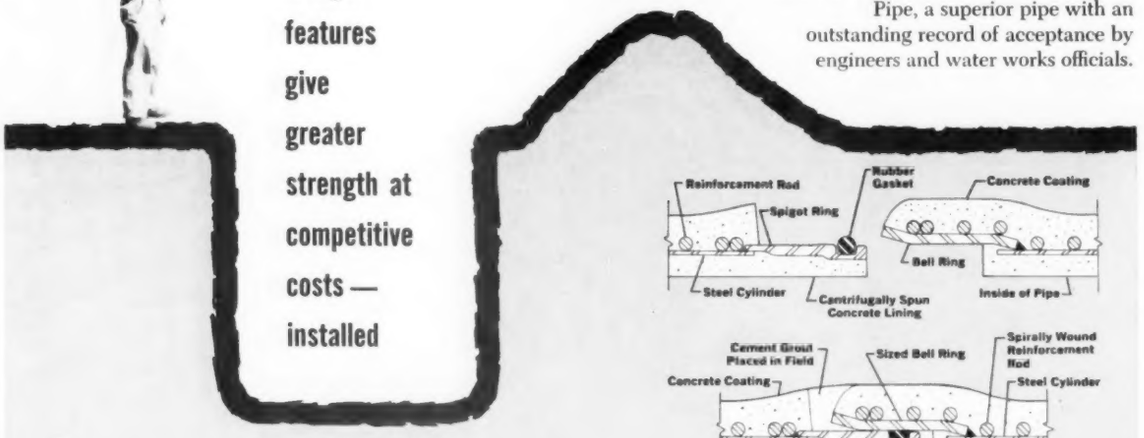
NATIONAL® PAPER DYES

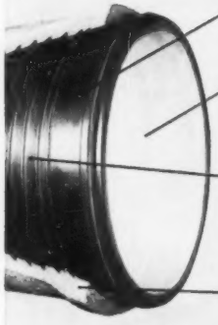
AMERICAN CONCRETE CYLINDER PIPE

Designed for Transmission of Water under Pressure

The unique and economical design of American Concrete Cylinder Pipe has attained an outstanding service record all over the Northwest. When you select pressure pipe for your permanent water transmission mains or distribution lines be sure to talk with an American sales engineer. He can supply you with comprehensive information concerning hundreds of installations in which this high quality pipe is performing economically and in accordance with operating requirements. This performance record stems from low first cost, simplicity of installation, sustained high carrying capacity and trouble-free service. Investigate American Concrete Cylinder Pipe, a superior pipe with an outstanding record of acceptance by engineers and water works officials.

advanced design features give greater strength at competitive costs — installed



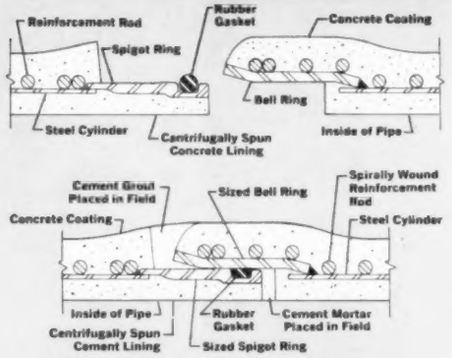


A. The steel cylinder provides a positive water seal or membrane as well as part of the total steel area required for internal stresses.

B. The smooth centrifugally applied mortar lining of at least ¾" thickness provides positive internal protection, sustained hydraulic capacity, and, **imparts rigidity and strength through "arching effect."**

C. Steel reinforcement rods, which together with the steel cylinder provide the total required cross-sectional steel area, are wound under controlled tension and accurate spacing around the concrete lined cylinder, placing it under moderate compression.

D. In conjunction with the steel rod reinforcement along the entire surface of the cylinder, the application of a dense concrete coating produces, in effect, a **reinforced jacket** which affords additional structural strength as well as positive exterior protection.



The rubber-gasketed joint guarantees a positive, dependable closure.

For literature or service in the Northwest write or call:

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American PIPE AND CONSTRUCTION CO.

518 N. E. Columbia Boulevard • Portland, Oregon

SIBAKIS

is the abbreviation for the American Management Association's bright, new slogan *See It Big and Keep It Simple.* It is also the most appropriate word for describing Huyck's viewpoint toward synthetic-content felts.

Huyck sees it big by (1) laboratory testing every man-made fiber presently available or in the development stage . . . and (2) thoroughly field testing those that show the greatest promise of improved felt performance — so that only the best remain.

Huyck keeps it simple by using *only* those fibers that give our felts superior operating properties.

Your Huyck Field Service Engineer wants to work with you in analyzing your specific machine requirements. Let him help determine the advantages you can gain by employing synthetic-content felts.

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Huyck Felt Co.,
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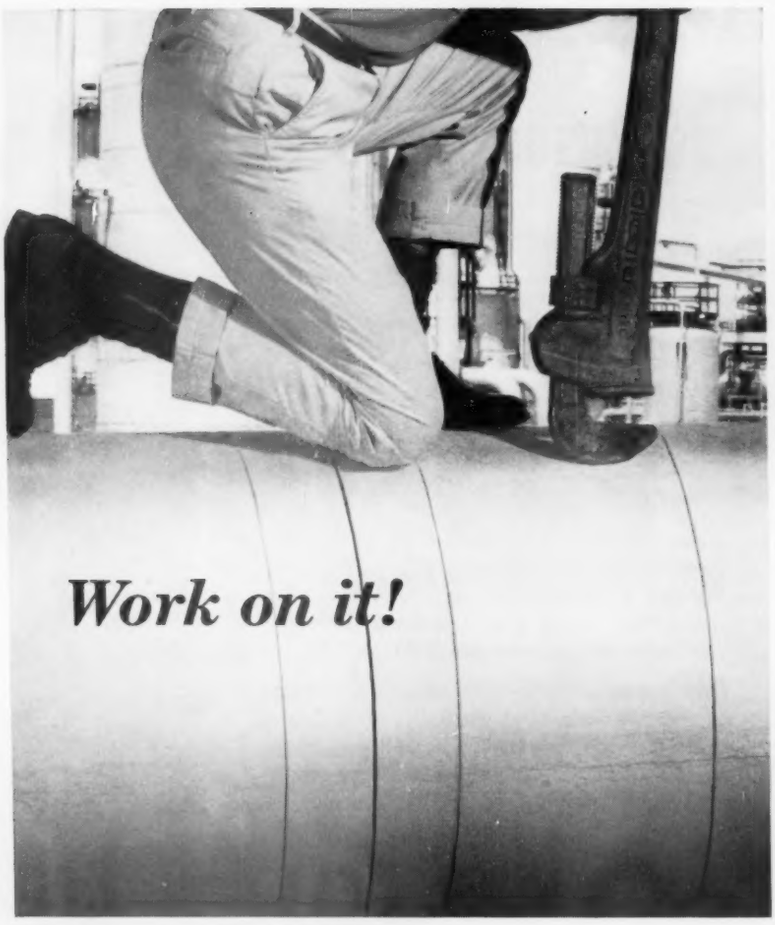
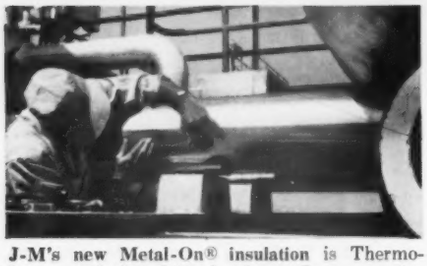
★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870





J-M's new Metal-On® insulation is Thermobestos prejacketed in aluminum. Snaps on pipe quickly . . . surely. Saves the time and cost of separate on-the-job metal application.

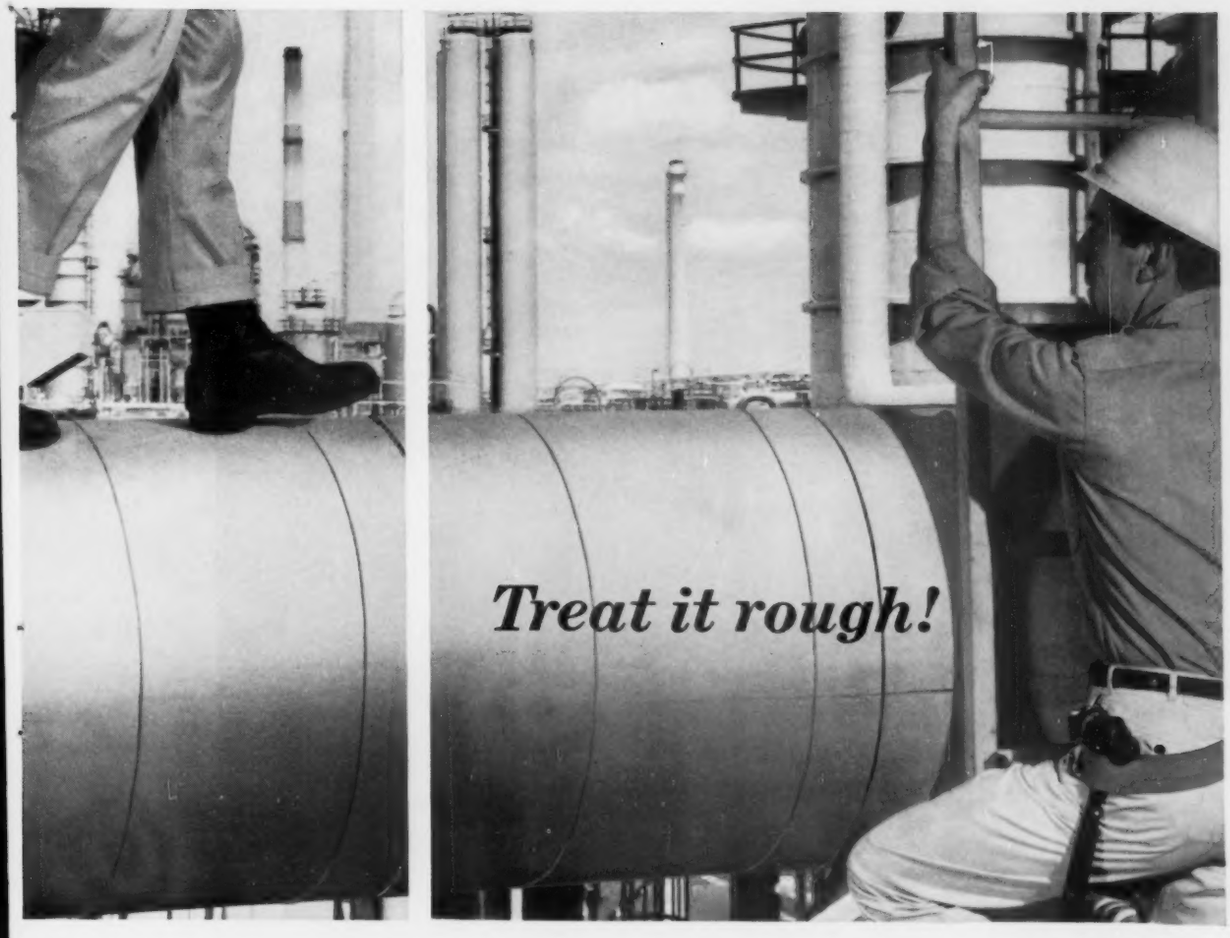
Seminars on best installation practices. For plant foremen who wish to keep up to date on new insulation methods and installation practices, J-M regional sales offices will gladly conduct insulation seminars. Contact nearest J-M office.

It's tough, durable Johns-Manville

Here's why Thermobestos is the preferred high-temperature calcium-silicate insulation . . . to 1200 F

You know the kind of treatment pipe insulation must take . . . day after day, year after year!

There's no better reason than this for the spiraling growth in Thermobestos® applications throughout the process and power generation industries —an insulation so strong and rigid, so resistant to crushing and compression it is almost structural.

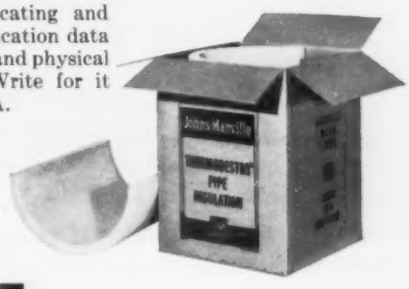


THERMOBESTOS insulation!

Equally important is the ability of Thermobestos to keep fuel costs low. Its *k* factor is the lowest of all insulations generally accepted for process applications. Its moisture resistance, unsurpassed.

Furnished in large, lightweight sections—precision-molded to unusually close tolerances—Thermobestos is easy to handle and install . . . readily adaptable to shop fabrication of fittings and bonds. Large selection of sizes, thicknesses (and quads up to 33″ pipe size) permit calcium-silicate installations that are entirely Thermobestos insulation.

You'll want the new Thermobestos booklet for your technical file. It contains complete information on prefabricating and installation practices . . . specification data . . . heat transmission tables . . . and physical and thermal characteristics. Write for it today. Ask for booklet IN-169A. Address Johns-Manville, Box 14, New York 16, N.Y. In Canada, 565 Lakeshore Rd. East, Port Credit, Ontario.



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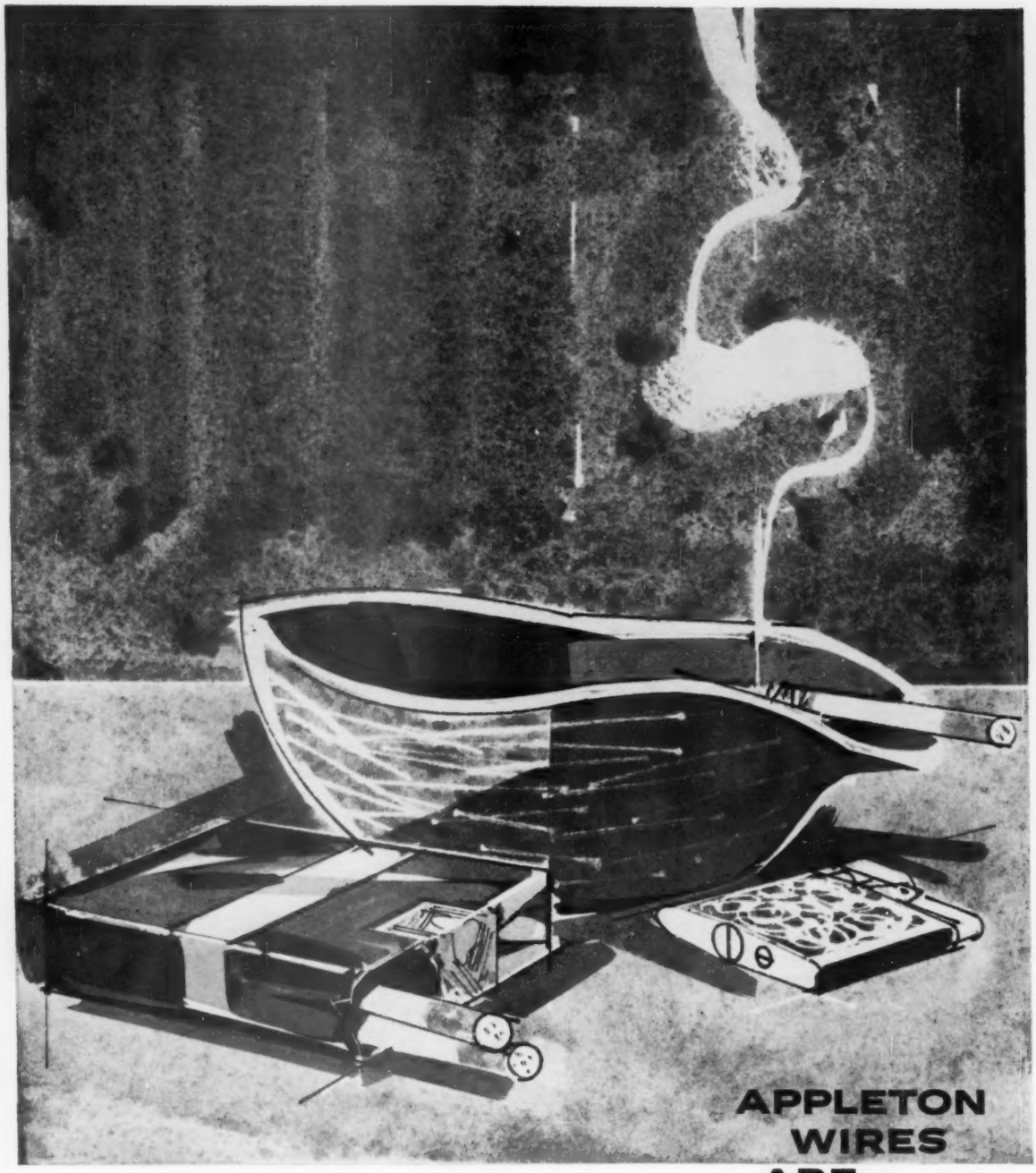

The delicate paper used for many major cigarette brands (most likely the one you're smoking right now!) is run on machines using Appleton wires. Whether they manufacture this fragile speciality paper or tough industrial sheets, particular paper people know that Appleton wires give them a longer, more profitable run for their money. Backed by 63 years of experience and the finest equipment that can be made, your AWW representative can suggest the Appleton wire that will prove profitable for you. Call him.

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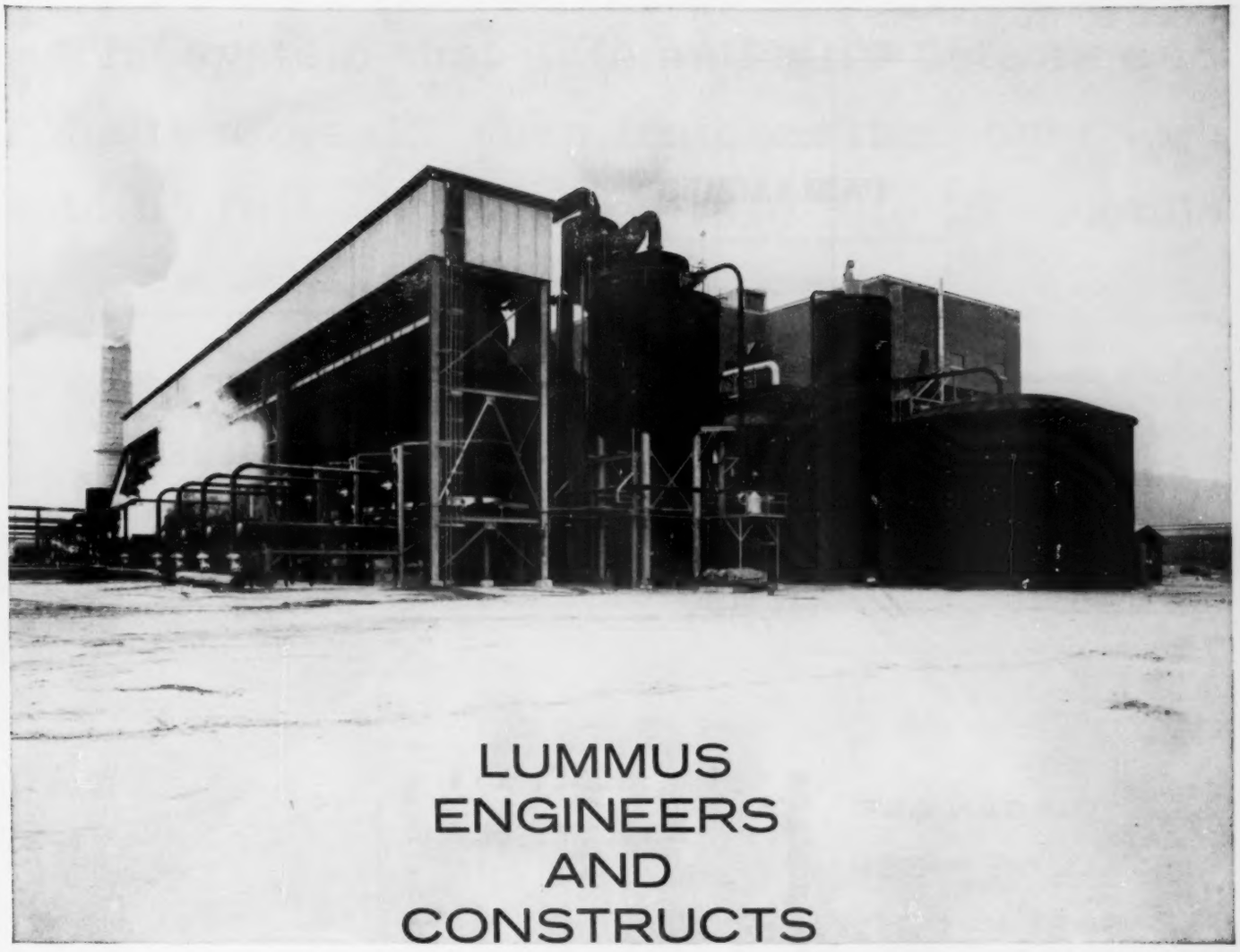

LUMMUS ENGINEERS AND CONSTRUCTS

Buckeye Cellulose Corporation's Wood Pulp Expansion

NATION'S OLDEST PRODUCER OF CELLULOSE PULP DOUBLES PRODUCTION CAPACITY OF FOLEY, FLORIDA, PLANT. The Buckeye Cellulose Corporation, America's oldest yet fastest growing cellulose pulp producer, will soon put into operation a new $20,000,000 wood pulp unit at Foley, Florida, thus completing an expansion program which doubles the plant's original production capacity.

The Lummus Company engineered and constructed the process units for these expanded facilities which assure Buckeye's customers a steady supply of highest quality Southern pine pulp. This new Lummus-designed plant is still another step in the growth of a company with 37 years of experience in producing cellulose pulp. Buckeye has the world's most complete line of celluloses, being the only producer of cellulose from both wood and cotton linters. Its cotton linter pulp mill was established in Memphis, Tennessee, in 1921.

Highest standards of processing are demanded by Buckeye to provide the best in cleanliness, brightness, strength and other specific qualities desired by users of Buckeye pulp. Long a research-minded company, Buckeye spends a higher percentage of sales on research activities than any other pulp producer.

In addition to engineering and constructing the process units for the Foley expansion, Lummus hired and coordinated various subcontractors for other portions of the plant. In spite of the complexity of such a large program, Lummus met the construction schedule and the new mill is assured a smooth start-up.

The Lummus Company has designed, engineered and constructed over 800 complete plants for the process industries throughout the world in the last 50 years. Lummus world-wide experience is at your disposal.

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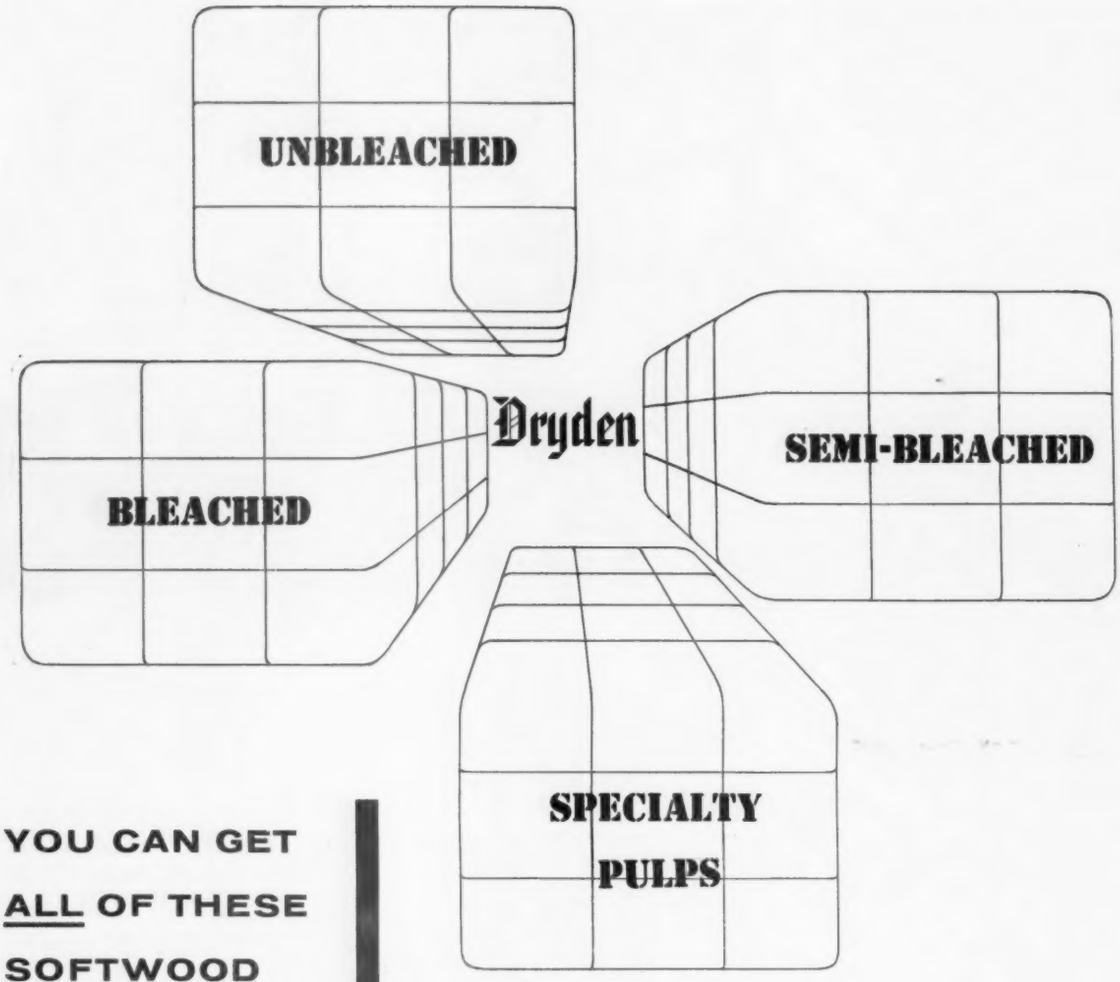

YOU CAN GET ALL OF THESE SOFTWOOD KRAFT PULPS FROM DRYDEN

We are sure you know about the high quality of Dryden Bleached Sulphate Pulp. But did you know that you can also make Dryden your single source of supply for many other kraft pulps?

Dryden Unbleached—widely recognized for its high tensile strength—for everything from twisting tissues to boxboards.

Dryden Semi-Bleached—exceptionally strong—in demand for such grades as sandpaper and shotgun shell papers, as well as twisting tissues.

Dryden Specialty Pulps—formulated to meet many unusual requirements. (We produce pulps for anti-tarnish papers and capacitor tissues, for example.)

We suggest you try a variety of these pulps as well as Dryden Hardwoods. We would be glad to make up a single boxcar shipment of several of our pulps for you to try in your own operations.

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Curtiss-Wright announces PERMAWEB*

The system that automatically detects and halts a break...then restores the paper web to its full width...all within 8 to 15 seconds

The paper industry's leader in basis weight and moisture control systems

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You will grasp the full importance of this development when you see PermaWeb in action. And you can—now! A special film made at the first PermaWeb installation is ready for viewing.

Call, wire or write George Butler, Manager, Industrial Controls Department, Electronics Division, Curtiss-Wright Corporation, 638 Central Avenue, Carlstadt, New Jersey and he will arrange a private showing at your mill.

*Patent applied for.

STOP WET-END BREAKS ON FOURDRINIERS

Mr. Harry Fisher of Pennsalt Technical Service and Mr. Harry Jansen, plant chemist, examining pulp samples from a bleached pulp decker at the Simpson Paper Company, Everett, Washington. The Simpson mill has installed the new Pennsalt Continuous Hypochlorite System.

Why PENNSALT is a major supplier of chemicals to the Pulp and Paper Industries of the Pacific Northwest

SODIUM CHLORATE
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CHLORINE
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CAUSTIC SODA
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ANHYDROUS AMMONIA

With two plants in the Pacific Northwest, Pennsalt provides quality controlled chemicals to the pulp and paper industries in the West, Canada and Alaska. These nearby plants mean economies in transportation, dependable supply, prompt delivery and reduction of inventory requirements. A highly trained and experienced staff of technical engineers can be put on your staff "but not on your payroll." Write or telephone for free technical bulletins.

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Pennsalt Chemicals
ESTABLISHED 1850

Here are the facts!...

BLANDIN SAVES $1.19 PER TON ON DRY CLAY

UNLOADS DRY CLAY at 12½ tons per min. Cyclo-Vac occupies only 180 sq. ft., stands 13 ft. high. Clay falls from it by gravity into 14,000 gal. tank, where it is dispersed by 75 hp. Lightnin mixer, within 4 hrs. after car is unloaded.

PETER HARRIS, BLANDIN CHEM. ENGINEER, EXAMINES HOSE. A 5 in. feeder line from r.r. car has four 90 degree elbows as it runs 75 ft. horizontally to separator. There is 8 ft. vertical lift.

Car Unloader Reduces Clay Handling Costs For Blandin, as It Increases Paper Coating

Blandin Paper Co., Grand Rapids, Minn., is saving time, space, and money in unloading bulk coating clay. A Cyclo-Vac car unloader, made by Superior Separator Co., Hopkins, Minn., operates like a giant vacuum cleaner, conveying 12½ tons of spray-dried coating clay an hour from 50-ton hopper cars.

"We're saving about $6,000 a year compared with costs handling slurry clay in the past," says Chemical Engineer Peter Harris. "The saving over bag clay is more substantial."

Now producing 80 tons of coated paper in daily output of 200 tons, the mill will use twice as much clay with its second coating machine, increasing coated paper production almost 100%.

Mr. Harris figures Blandin saves $1.19 per ton by unloading dry clay with the Cyclo-Vac. Using 100 tons a week on a 50-week year basis this amounts to $5,950.

For a typical period reveals that Blandin paid $1,011.04 for a 50-ton carload of wet clay. Freight costs of $1,066.58 and tax of $32 brought carload cost to $2,109.62. Cost of a ton at mill was $41.73.

With the Cyclo-Vac, Blandin buys a car of dry clay for $1,086.87 and pays $887.69 in freight. Tax is $26.63 for a carload cost of $2,001.19 or $39.59 a ton. Starting with the original saving of $2.14 a ton, Mr. Harris subtracts unloading and makedown costs of 95¢ a ton for a saving of $1.19 per ton.

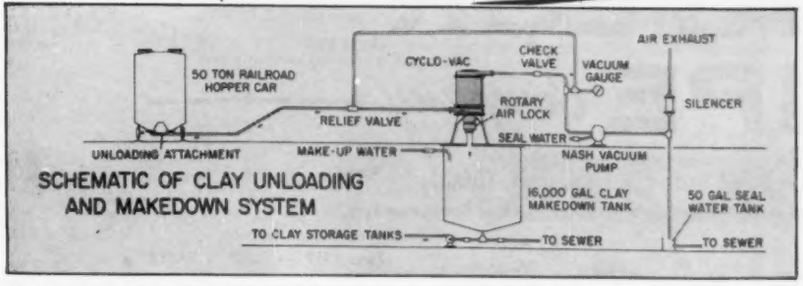
A five-inch line is quickly connected to the hoppers of the railroad car, and the Cyclo-Vac operates as a negative pressure air conveying system. It uses a high speed, self-cleaning metal rotor which separates the conveyed dry clay from the air stream by centrifugal force.

Recovery of the clay is as high as 99.9%, and there is no dust problem. A level control above the air lock prevents build-up of clay and the possibility of damaging the rotor. If clay builds up in the Cyclo-Vac the pump shuts off automatically while an air lock continues to run and clear the system. Then the pump starts and conveying continues. This may happen only once or twice in a carload. Supervision is unnecessary.

"It takes about an hour to make connections, change to different hoppers and clean up inside the car with a shovel at the end of unloading," Mr. Harris says. "That means a man can handle a regular job and slip away long enough to take care of unloading."

The installation at Blandin Paper mill cost approximately $9,500.

Reprinted from PULP AND PAPER – December, 1958



Air Conveying System at Blandin Paper Co.

Fluidizer®

Most advanced in modern air handling

THE FLUIDIZER COMPANY
A DIVISION OF SUPERIOR SEPARATOR CO.
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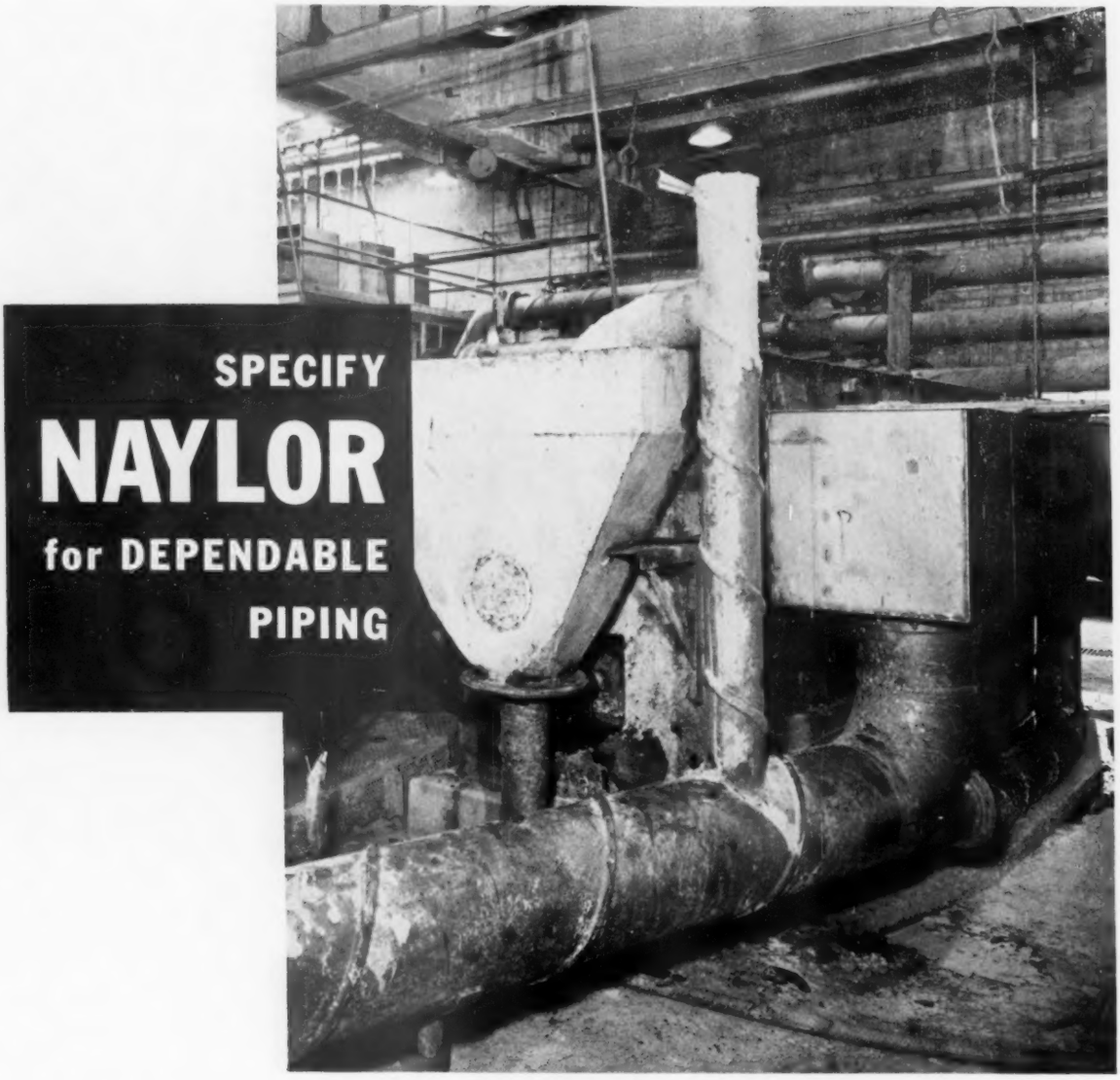

SPECIFY NAYLOR for DEPENDABLE PIPING

When you need pipe, fittings or special piping fabrications, NAYLOR fabrication service is geared to take care of your requirements promptly and economically. Made from carbon steel, alloys, or stainless steel to meet your specifications.

PIPE SIZES from 4″ to 30″, in wall thickness from 14 to 8 gauge.

SPECIAL FABRICATIONS from 3″ to 44″ and in wall thickness up to ⅜″.

STANDARD FITTINGS available from stock.

Write for Bulletin No. 59 and send specifications for quotation

NAYLOR PIPE *Company*

1271 East 92nd Street, Chicago 19, Illinois

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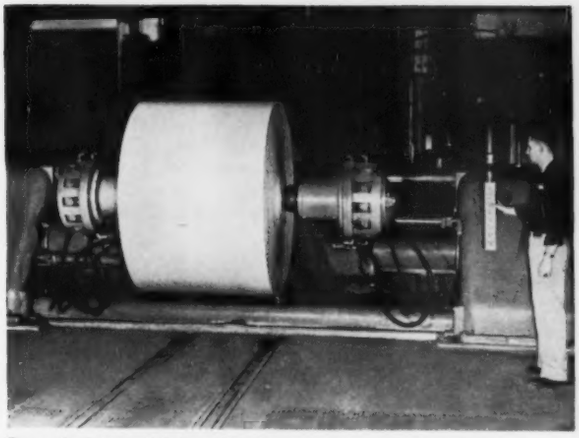
Ready for the roll. Notice the absence of a shaft. Roll is moved in between lifting arms which close under pressure and elevate to desired height.

LANGSTON SHAFTLESS UNWIND STAND

Boost your production . . . reduce your slitting and rewinding costs



Easy, fast, completely safe. One man does everything. Operating push-button controls, he closes lifting arms, elevates roll, sets brakes.

One man can load the heaviest roll. No heavy shaft to handle. No cone tightening. No couplings to engage. No crane lifting. Just pushbuttons. This is the Langston heavy duty shaftless unwind stand for rewinding and converting applications.

You not only save time, you also get better unwinding. Roll can be positioned laterally by push-button control—even when the machine is running. It's held firmly under pressure for complete safety throughout the unwind. Several braking arrangements can be provided to handle a wide range of grades and conditions. Available extras provide for handling very narrow rolls; for constant tensioning; for automatic braking of idler rolls; for automatic web alignment and side register control; for web oscillation; and for local or remote control.

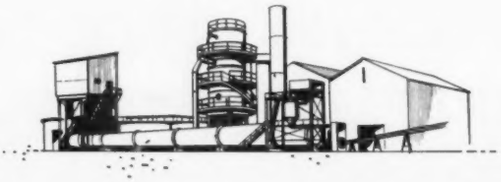
This new Langston shaftless unwind stand can be used with any make of slitter. Available for maximum roll widths from 40 to 132 in. and diameters from 14 to 84 in. Speeds to 3000 fpm and higher. For complete information, write Samuel M. Langston Co., Camden 4, N. J.

SHEAR CUT CLEAN CUT

LANGSTON *Leadership...by design*

West End earns its position as a responsible supplier of salt cake

In 1955, with its first offering of salt cake, West End assured the Industry of an ability to meet long-term commitments based on vast natural raw material supply, ample production and storage capacity, rapid and efficient transport facilities. By unconditional fulfilment of every commitment for over 4 years, West End has conclusively demonstrated its complete reliability as a major source of highest quality salt cake. Every normal and unanticipated requirement has been met with equal ease and dispatch.



Today, with even larger facilities and a determination to maintain the reputation it has earned, West End is solidly qualified to handle any size requirement in a wide marketing area where it is a logical source of salt cake for kraft paper manufacturers. You are invited to consult with us on the over-all economics of using West End Salt Cake.

Stauffer CHEMICAL SINCE 1885

WEST END CHEMICAL COMPANY
DIVISION OF STAUFFER CHEMICAL COMPANY

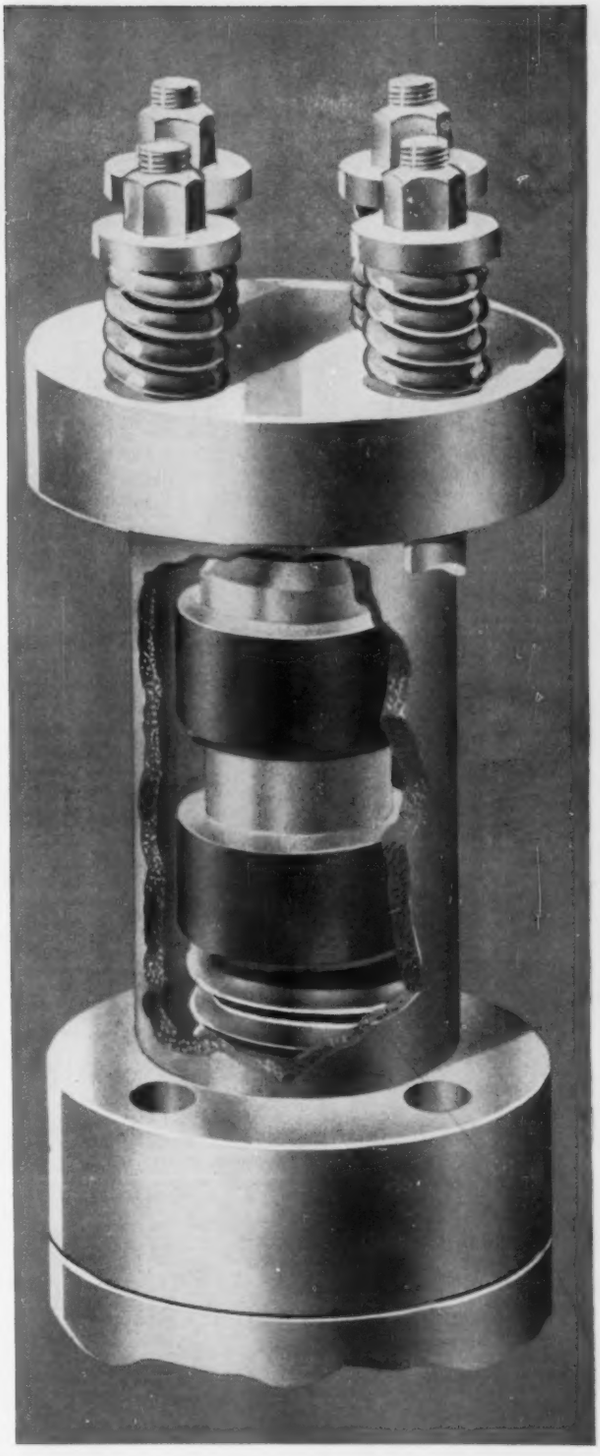
EXECUTIVE OFFICES: 1956 WEBSTER, OAKLAND 12, CALIF. • PLANT: WESTEND, CALIF.

NOW KOPPERS LEADS AGAIN

by bringing you lower precipitator maintenance and operating costs with

K-30*

bonded pistons on pneumatic vibrators



By eliminating the need for lubrication of the rapping mechanism in electrostatic precipitators, Koppers saves you many operational man-hours and maintenance costs.

This lubrication-free operation results from bonding a new wear-resistant material to vibrator piston surfaces. This special self-lubricating compound, identified by Koppers as "K-30," is composed of Teflon† and other wear-resistant materials that together provide a self-lubricated surface.

Most rapping mechanisms demand regular maintenance to be trouble-free, but "K-30" eliminates this need and provides more reliable operation.

Koppers research, backed by many years of experience in the electrostatic precipitation field will help you find the answer to your gas cleaning problems. Check with Koppers to learn how "K-30" can develop top efficiency in present or planned precipitator installations. For more information, write: KOPPERS COMPANY, INC., 6906 Scott Street, Baltimore 3, Maryland.

*Koppers Trademark

†E. I. duPont de Nemours & Company, Inc. trademark for tetrafluoroethylene resin

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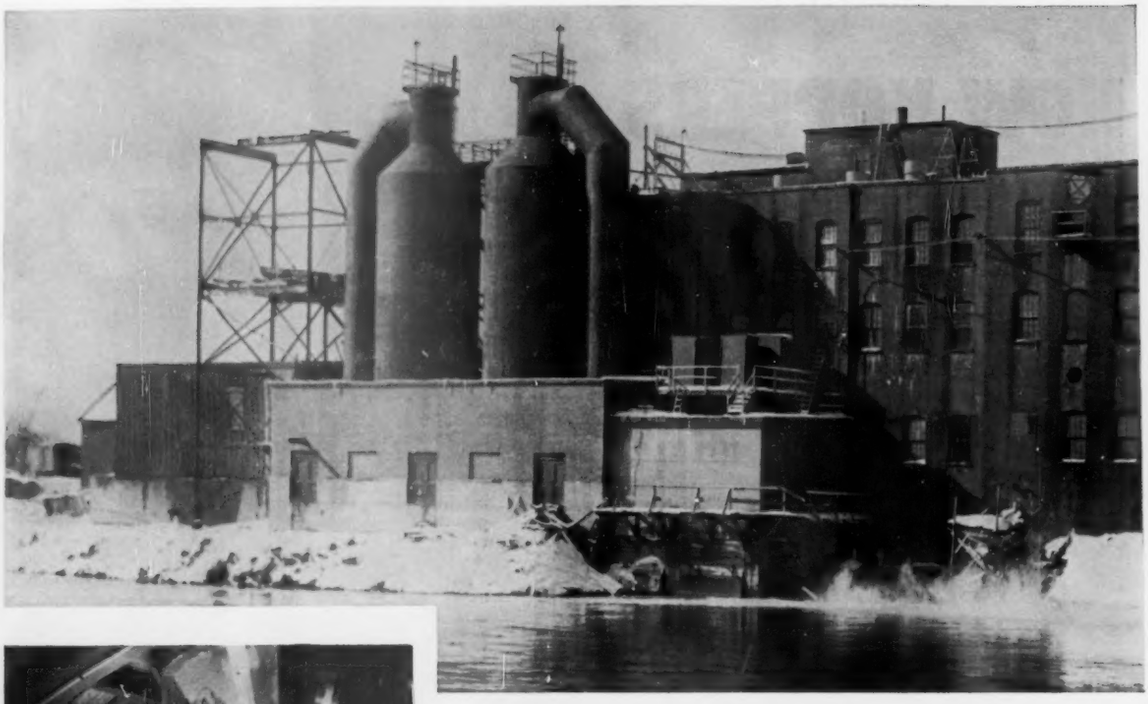
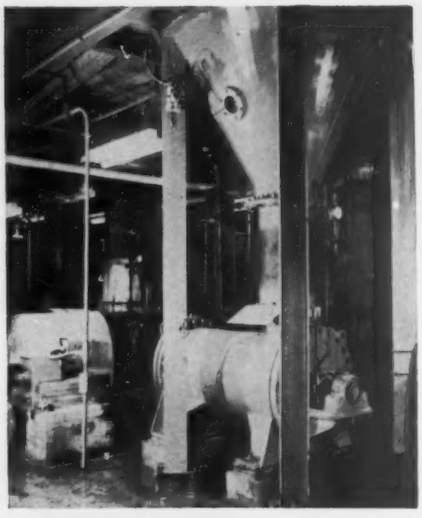
Engineered Products Sold with *Service*

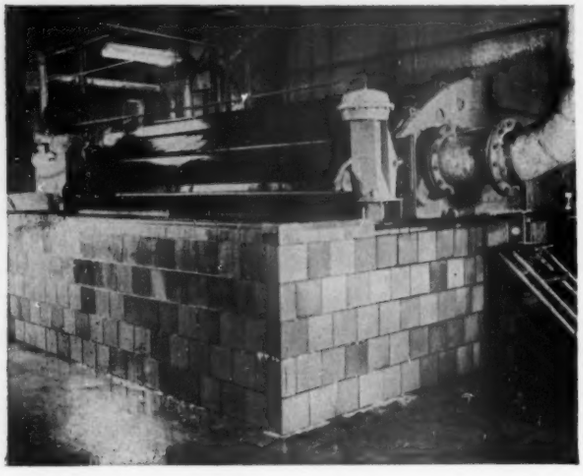




PENOBSCOT CHEMICAL FIBRE COMPANY BLEACHING SODA AND SULFITE PULPS WITH IMPCO CLO_2 BLEACH SYSTEMS

Soda and sulfite market pulps, bleached to highest brightness with chlorine dioxide, are being produced by Penobscot Chemical Fibre Company in Great Works, Maine.

The Impco, "up-flow, down-flow" CLO_2 bleaching stages, erected outside the bleach plant can be seen in the above photograph. Also shown, is an Impco Hastelloy Chlorine Dioxide Mixer and an eight-foot diameter Vacuum Washer — one of six new Impco filter installations at this mill.



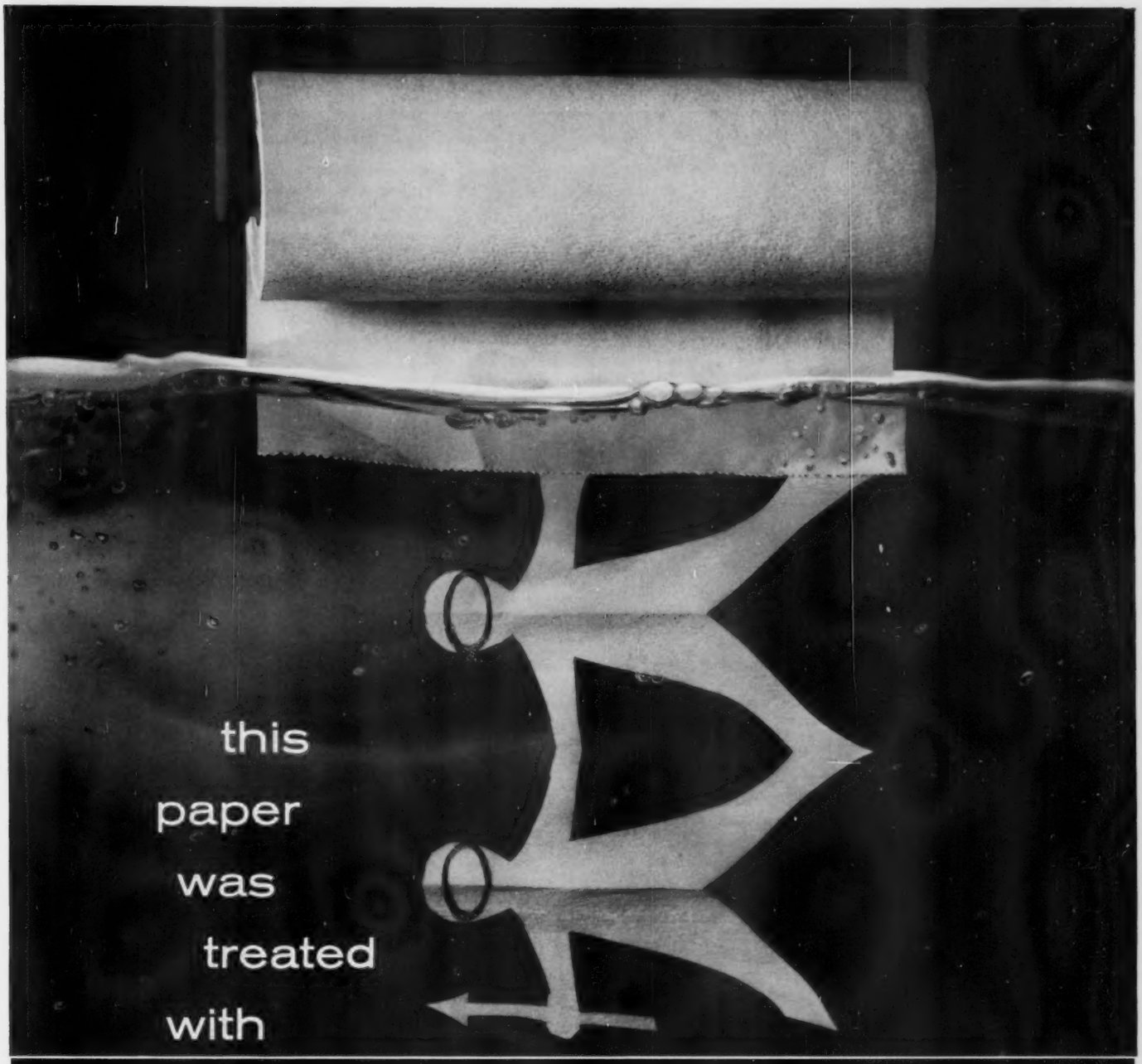
Since 1882 P.C.F. has consistently produced fine quality paper making pulps. Impco is proud to have been a part of this modernization and expansion program.

IMPCO®

IMPROVED MACHINERY INC.

Nashua, New Hampshire

In Canada, Sherbrooke Machineries Limited
Sherbrooke, Quebec



SCRIPTITE* 40

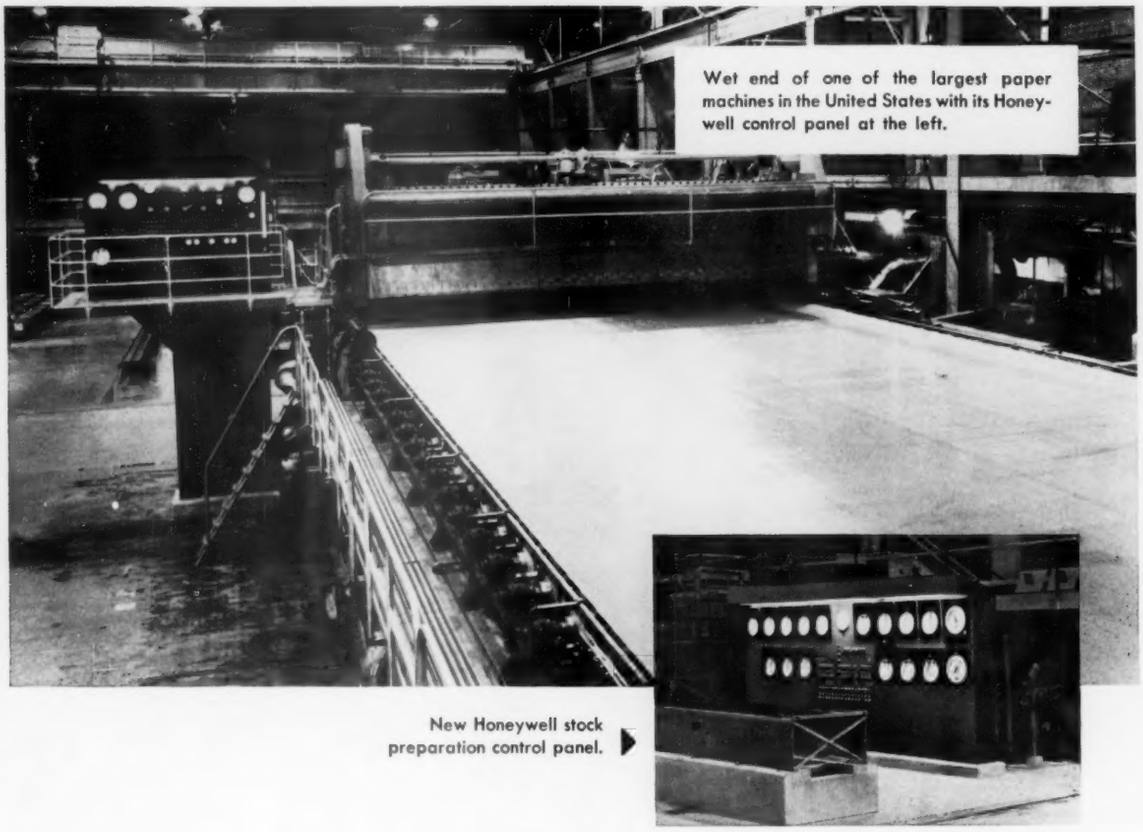
Scriptite 40, a new concept in urea-formaldehyde paper resins, imparts high off-machine wet strength with less resin add-on. Made more cationic, this water-soluble resin is strongly attracted to the cellulose, assuring greater application efficiency. Formulated for fast cure, Scriptite 40 also improves dry tensile strength, dry mullen, wet rub resistance, dimensional stability, and folding endurance. For samples and technical data, write: Monsanto Chemical Company, Plastics Division, Room 1108, Springfield 2, Mass.

Monsanto

*SCRIPTITE, LYTRON: Reg. U.S. Pat. Off.

The Monsanto line of paper resins also includes

SCRIPTITE 54 *outstanding water resistance, both wet and dry rub resistance.* **SCRIPTITE 55** *a low viscosity resin for improved water resistance, wet and dry rub resistance with easy handling.* **SCRIPTITE 52** *in combination with formaldehyde, gives water resistance to folding boxboard and jute liner.* **SCRIPTITE 50** *unsurpassed printability, improved surface characteristics on boxboard.* **SCRIPTITE 33** *melamine wet-strength resin.* **SCRIPTITE 45** *new thermosetting resin for stabilization of paper.* **LYTRON*** *water dispersal resin polymers for coatings.*



Wet end of one of the largest paper machines in the United States with its Honeywell control panel at the left.

New Honeywell stock preparation control panel.

Again at Coosa River Newsprint Company

. . . *Instrumentation by* HONEYWELL

When Coosa River Newsprint Company built a mill at Coosa Pines, Alabama, in 1949, Honeywell instrumentation was selected for control of most of the mill processes. When the company recently expanded its facilities, Honeywell instrumentation again was employed.

Coosa River knows the advantages of dealing with this single, dependable source for mill instrumentation and installation. Purchasing is simplified. Spare parts inventory is reduced. System components are easily adapted to changing process requirements. Maintenance is easier. And the job is backed by the world's largest instrument service organization.

Why not enjoy these advantages in your own mill? Honeywell can handle your control requirements . . . and take full responsibility for the job, from preliminary planning through installation and startup. Talk it over with your Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL *First in Control*

Why Hunter Packing Company uses STANOIL Industrial Oil

Two reasons: (1) STANOIL is a superior oil. (2) Along with STANOIL, Hunter Packing receives experienced lubrication technical service.

A special antioxidant in STANOIL gives the oil resistance to *chemical* change. Deposits are minimized. The oil has a high viscosity index, is resistant to *temperature* change. It lubricates effectively at both high and low temperatures. Due to special refining techniques, STANOIL will not readily emulsify. A special additive minimizes foaming. STANOIL has a low pour point. It flows freely at low temperatures. A rust inhibitor in STANOIL "plates out" on metal surfaces.

W. P. "Sandy" Wehking, the Standard Oil man who calls on Hunter Packing Company, has plenty of experience in technical service work. He's been at it for 17 years. Sandy studied chemistry at Blackburn College. He has also completed the Standard Oil Sales Engineering School.

To get more information about STANOIL Industrial Oil and to obtain technical help on your lubrication problems, call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Quick facts about
STANOIL Industrial Oil

- Antioxidant gives oil resistance to chemical change, minimizes deposits.
- Inhibitor "plates out" on metal surfaces, prevents corrosion.
- Receives special refining to eliminate emulsion problems. Contains additive to minimize foaming.
- High viscosity index. Resists temperature change.

You expect more from **STANDARD** *and you get it!*

Temperature check. Frank Persson of Hunter Packing Company and Standard Oil lubrication specialist W. P. "Sandy" Wehking inspect one of four compressors in Hunter plant that uses STANOIL Industrial Oil.

BOTH REDUCERS HAVE THE SAME CAPACITY!

This dramatic saving in weight and space is possible only because the reducer on the left has Philadelphia Precision Ground Gearing . . . a new development, so significant you can solve drive problems you could never solve before . . . because you get engineering advantages that have never been available before.

For the first time, standard commercial speed reducers are available with gearing of master gear quality. Extreme accuracy of profiles, profile spacing and surface finish reduce dynamic load factors. Harder gear materials can be used. Result: increased load carrying capacity without sacrificing performance characteristics.

Gear noise is reduced to the point where it is no longer a controlling factor in applications where low sound levels are important.

Backlash is reduced in reversing drives . . . and it is uniform where precision of movement is important.

Vibration is virtually eliminated because tooth to tooth errors, accumulated pitch errors and composite errors are reduced . . . smoother contact results.

Longer gear life. Improved accuracy and better surface finish eliminates "running-in" periods and the resulting wear on gearing.

If you have a new product on the boards . . . design changes coming up . . . or new drive requirements of any kind, Philadelphia Precision Gear Drives may give you the competitive edge you've been looking for. Write for full data on precision ground gearing in spiral bevel, parallel shaft and In-Line reducers as well as gearmotors and Motoreducers. If you have a special drive problem, the full facilities of our engineering staff are available to help you find the solution.

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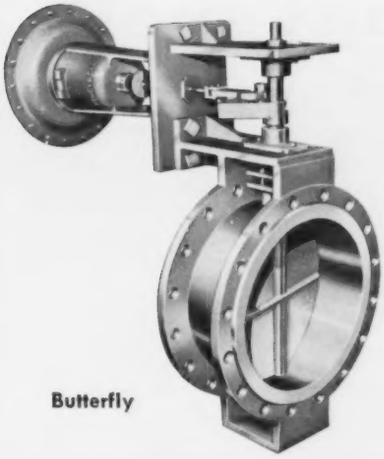
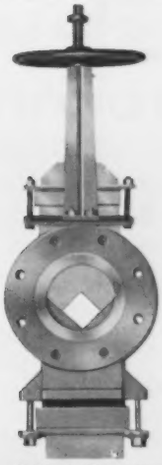
Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.
INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS



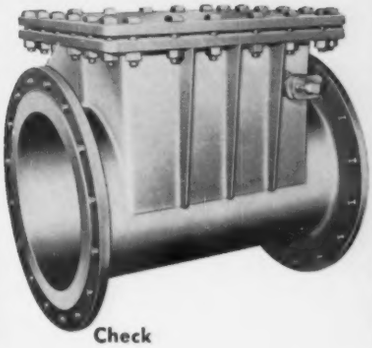
Butterfly

FABRI-VALVE has the ANSWER...



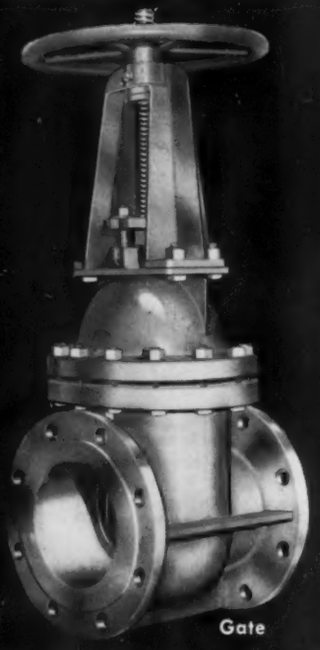
V-Port Metering

FABRI-VALVE



Check

BUTTERFLY
V-PORT METERING
CHECK
GATE
STOCK



Gate

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FABRI-VALVE

FABRI-VALVE CO. OF AMERICA
2100 N. Albina, Portland, Oregon

BUTTERFLY • V-PORT METERING
CHECK • GATE • STOCK

Stock

Four features that spell recovery unit performance

1. Panel Type Superheater and Screen
2. Tangential Overfire Air
3. Decanting Hearth
4. Precise Control

These are design features of the C-E Chemical Recovery Unit. How they contribute to efficiency, economy and flexibility is discussed below. That they blend into an integrated design is evident from the acceptance the unit has received, as indicated by the list at right. Note that the smallest unit listed has a capacity of 1,500,000 lbs. of dry solids – a size unheard of just a few years ago. Note too, that three of the thirteen contracts are repeat orders.

C-E Contracts for Large Recovery Units
(500 Tons and above)

Name	# Dry Solids/24 Hrs.
Enso Gutzeit OY	1,500,000*
Union Bag & Paper Corp.	1,610,000*
Halifax Paper Co., Inc.	1,500,000*
B. C. Forest Products Ltd.	1,600,000*
Longview Fibre Co.	2,000,000*
Crossett Paper Mills	1,500,000*
International Paper Co.	1,500,000*
Enso Gutzeit OY	1,500,000*
Union Bag & Paper Co.	1,610,000
East Texas Pulp & Paper Co.	1,600,000*
Enso Gutzeit OY	1,500,000
Rome Kraft Corp.	1,667,000
Celgar Ltd.	1,600,000

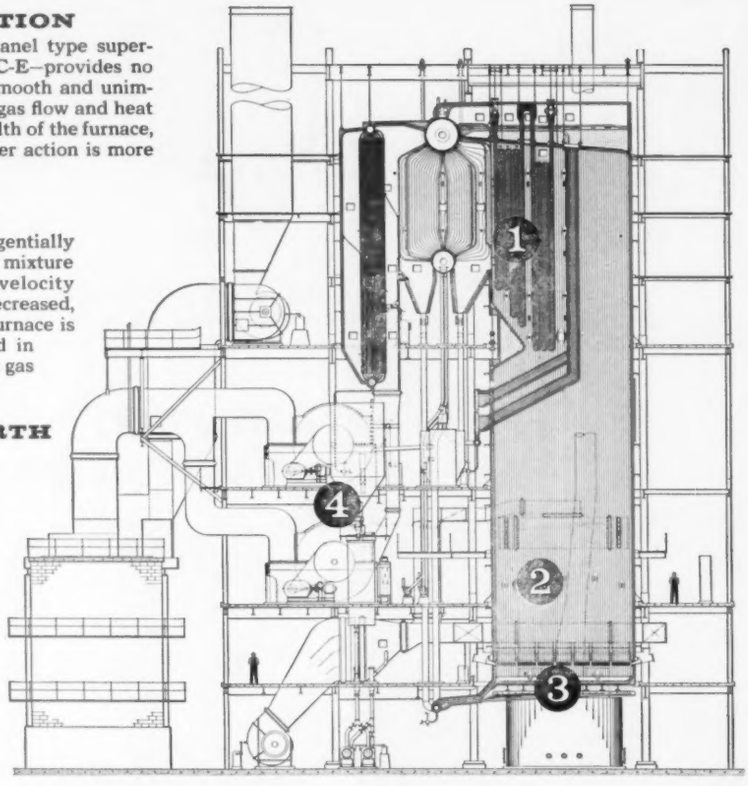
*In service

1. PANEL CONSTRUCTION
The widely spaced self-cleaning panel type superheater and screen—developed by C-E—provides no foothold for slag. Gas passage is smooth and unimpeded. Slag build up is minimized, gas flow and heat absorption is uniform across the width of the furnace, surfaces are cleaner and soot blower action is more effective.

2. TANGENTIAL AIR
Secondary air is introduced tangentially above black liquor sprays. Fuel-air mixture is intimate and complete. Gas velocity upward through the sprays is decreased, ash entrainment in gases leaving furnace is reduced. Combustion is completed in lower part of furnace, furnace exit gas temperature is reduced.

3. DECANTING HEARTH
A layer of chilled smelt is held in contact with the water cooled furnace floor. Molten smelt rides on top of the chilled layer and leaves the furnace without touching hearth refractory or floor tubes. The cost and inconvenience of downtime due to hearth failure is eliminated.

4. CONTROL
Furnace stability is assured because evaporative heat is controllable to compensate for density differences in incoming liquor, regardless of limited multiple effect evaporator capacity. Liquor temperature is controlled accurately and automatically and fuel-air ratios are automatically proportioned to maintain the furnace atmosphere required for high reduction.



COMBUSTION ENGINEERING
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CANADA: Combustion Engineering-Superheater Ltd.
C-155B

...RNING AI... ...IPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING EQUIPMENT; PRESSURE VESSELS; SOIL PIPE

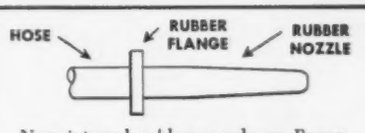
US RUBBER PAPER MACHINE HOSE

The Seminole Chief is washed daily with the hose that needs no care

24 hours a day...7 days a week...this U.S. Rubber Hose is used to wash down the "Seminole Chief"—the giant new paper machine in the St. Regis Paper Plant in Jacksonville, Florida. The Fourdrinier wires, for example, must never be permitted to clog up with fibre. Clogging would mean shutting down the machine for an hour or more. Constant hosing prevents this. The hose itself is roughly handled—it lies on the floor all the time, receives no care whatever. Thanks to its abrasion-resistance, flexibility and durability, U.S. Paper Machine Hose *takes care of itself.*

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



New integral rubber nozzle on Paper Machine Hose has a built-on flange approximately 4" from the end. Flange is ⅛" wide, ¾" high; it prevents the nozzle from lying flat where it can be damaged. Workmen like the easy grip the flange gives.

US RUBBER

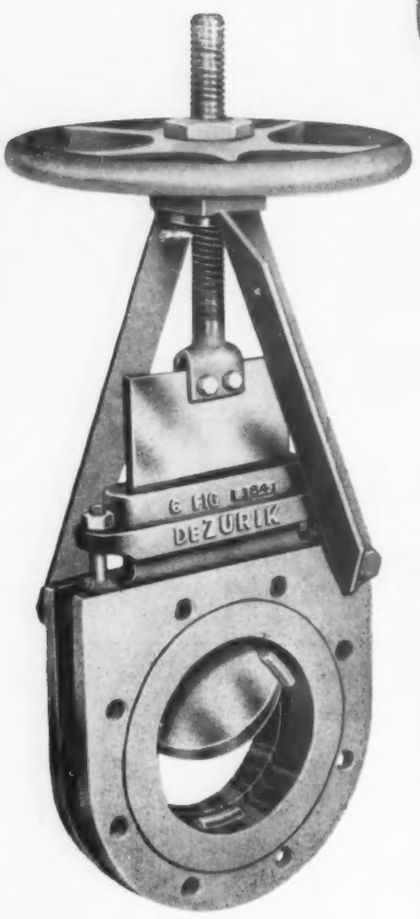
Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

EVERY DAY THE COST OF A DeZurik Valve GOES DOWN!



And it starts the first day! DeZurik Bonnetless Knife Gate Valves cost less to install; because of their light weight, they need no extra piping supports. Yet their rugged construction withstands piping strain and line pressure without distortion.

Every day they're in use, DeZurik Valves continue to reduce costs with their freedom from the usual maintenance expenses. The large yoke head providing a liberal machined surface for the operating nut . . . the stainless steel stem, with double-pitch threads for less wear . . . the inverted stuffing box, eliminating side pressure on the gate and frequent adjustments . . . the round port bottom, eliminating corner cavities where stock can pack . . . all of this maintenance is reduced with DeZurik Valves.

Add to this the long life . . . and the low *original* cost of DeZurik Bonnetless Knife Gate Valves and you get unsurpassed valve value!

With manual, on-off and positioning operation, in a wide variety of metals. For more information write for Bulletin 300.

DeZURIK CORPORATION
SARTELL, MINNESOTA

Preparation of core stock in Hydrapulper

. . . results in superior paper mill cores!

Sonoco quality control begins in our own paper mills. Here the core stock for paper mill cores is made to rigid Sonoco specifications. Throughout our completely integrated manufacturing facilities, quality can be, and is, carefully maintained from raw material to finished product. The end result is that Sonoco cores deliver the kind of uniform, trouble-free performance that adds up to cost savings in use.

DUROLENE CORES: Premium Sonoco quality. Available as a non-returnable core in all diameters and lengths, or returnable with Bermico metal ends in standard sizes.

DURO CORES: Standard Sonoco quality. Available with or without Bermico metal ends.

SONOCO
Paper Mill Cores

SONOCO PRODUCTS COMPANY

Both Durolene and Duro cores guarantee ultra-high torque and crush strength, plus close tolerances to all dimensions.

Specialty cores, from ¼" I.D. and up, in lengths to 24'. Supplied in colored stock or with special inside or outside wrap, plain or printed.

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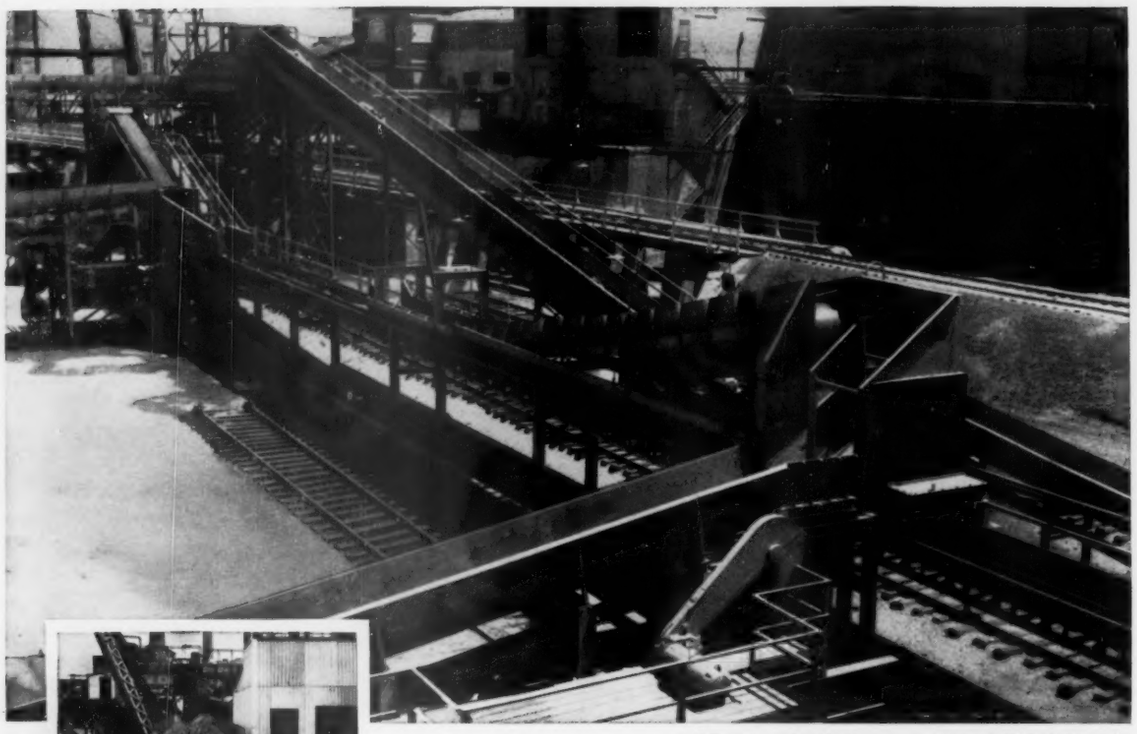
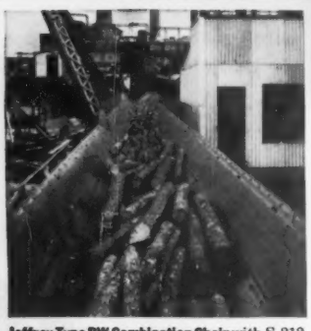
1865



Jeffrey Conveying Machinery was first installed at this pulp and paper mill over ten years ago . . . and selected again for use in these recent additions to the company's facilities.



Jeffrey Type PW Combination Chain with S-212 spur attachment is used on this pulpwood conveyor. Service demands heavy chains with extra large surfaces to withstand wearing action of sand and grit in troughs and return runways.

Jeffrey Drag Type Feeders—One of a battery of feeders under chip storage bin. Chips pass through upper strand of flights to bottom plate. Lower strand carries them to discharge point over belt conveyor.

Jeffrey 36" x 36" Type B Wood Hog—Reduces bark and broken pulpwood sticks from barking drums.

Jeffrey equipment again selected when this mill was extended

The expanded facilities of this pulp and paper mill include Jeffrey conveyors, chain, and machinery... and a lot of credit for their re-specification goes to other Jeffrey equipment installed in the original mill over ten years ago.

Wherever Jeffrey equipment is used, it establishes a solid performance record for efficient, dependable operation. Jeffrey makes a broad range of equipment for conveying, processing, power transmission... equipment that can help you operate at top efficiency. For complete information write The Jeffrey Manufacturing Company, 809 North Fourth Street, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

Pocket More Profit with a New Homelite ~~WIZ~~ Bow Saw

Only $249.95 f.o.b. Gastonia, N.C.

Put more money into your pocket with a new Homelite Wiz — the first high quality, low-cost gear drive bow saw. With the new Homelite Wiz, you'll cut more wood in less time with less maintenance—and you'll make more money!

The famous Homelite high compression, short stroke engine delivers plenty of lugging power . . . fells trees up to five feet in diameter . . . whizzes through 18" trees in 16 seconds. Rugged design stands up under the grind of day-in-day-out professional cutting.

Big new 16" plunge-cut bow makes your job easier . . . eliminates stooping, gives you a pinchless cut. Straight blades from 14" to 28". Also available with clearing bar.

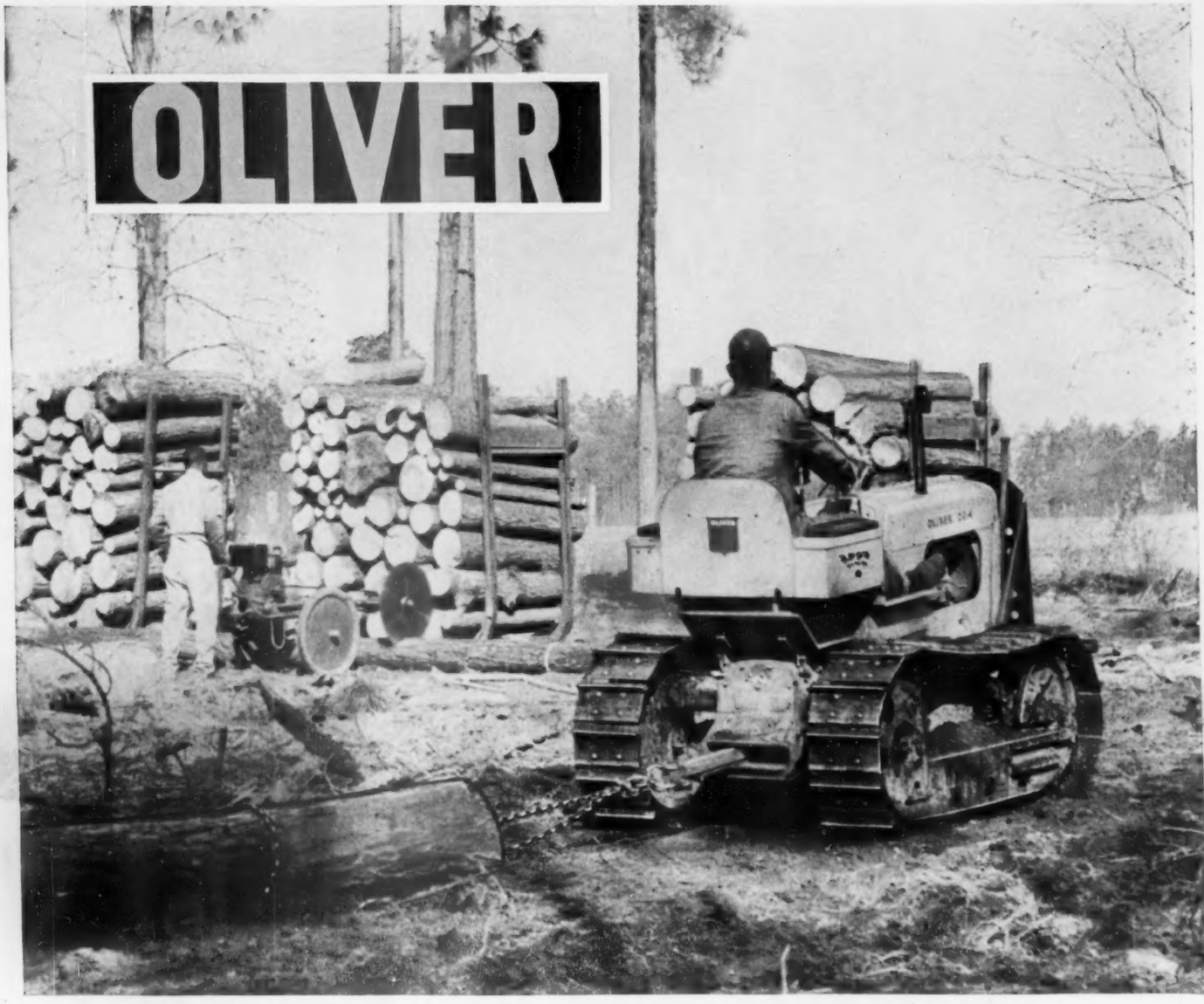
Ask your nearby Homelite dealer for a free demonstration. Let him show you how easy and profitable pulp cutting can be when you team up with a new Homelite Wiz bow saw.

AS LITTLE AS $4.30 WEEKLY, AFTER SMALL DOWN PAYMENT

HOMELITE
A DIVISION OF TEXTRON INC.
7706 RIVERDALE AVE., PORT CHESTER, N. Y.

Find Your Homelite Dealer In The 'Yellow Pages'

ANOTHER FIRST! All new Homelite bars and bow guides are guaranteed for a full 60 days! Straight blades: Hard Track plus Extra Hard Tip. Bow guides: Extra Hard Surface *all the way around!*

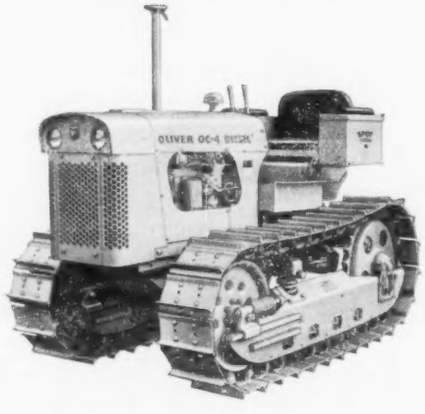


New "Spot-Turn" clutch steering peps up woods work

Oliver steps ahead with a new advance in the crawler field. It's "Spot-Turn" clutch steering—to speed up your log handling. It gives you greater maneuverability, easier handling, faster work cycles. Now, with a light touch on the controls, you can make gradual turns, tight turns or complete about-faces—*fast!* "Spot-Turn" is responsive, dependable, simple—better in every way. Steering is always the same—uphill, downhill, sidehill—with or without a load. "Spot-Turn" lets you do more work in a day's time.

The Oliver OC-4 crawler, shown above, is popular wherever men harvest pulpwood. It goes anywhere in the hills and woods to do the job faster and cheaper. Now, with "Spot-Turn" as standard, it's a bigger value than ever.

Try "Spot-Turn" yourself and see the difference. *See your dependable Oliver distributor soon.*



The Oliver OC-4 is a compact, speedy, 30 h.p. worker. Four-speed transmission answers every need for speed and power—from 1½ m.p.h. to a lively 5½ m.p.h. Full line of attachments—dozer, loader, winch, angleblade and many others. Try the OC-4 soon.

OLIVER **THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

MICHIGAN TRACTOR LOADERS are the key to a new dry land unloading, sorting and barker servicing at Intermountain Lumber Co., Missoula, which has replaced the traditional log pond.

Chip Business in Montana

puts traditional log pond out of business. Michigan loaders work on dry land, sorting and serving speedy Nicholson barker

● The traditional log pond of the forest industries was abandoned at the Intermountain Lumber Co., Missoula, Mont., as a result of this company going into the business of producing pulp mill chips.

A PULP & PAPER editor, visiting this important lumber firm, found many changes in normal practices, in order to enable it efficiently to join in what is a new business in Montana —chip production. The first pulp mill in the state's history, the kraft mill of Waldorf Paper Products Co. of Montana, is the reason, of course. And Intermountain is just one of 11 sawmills serving Waldorf and thereby finding a use for wood that formerly went up in smoke, because it had no usefulness.

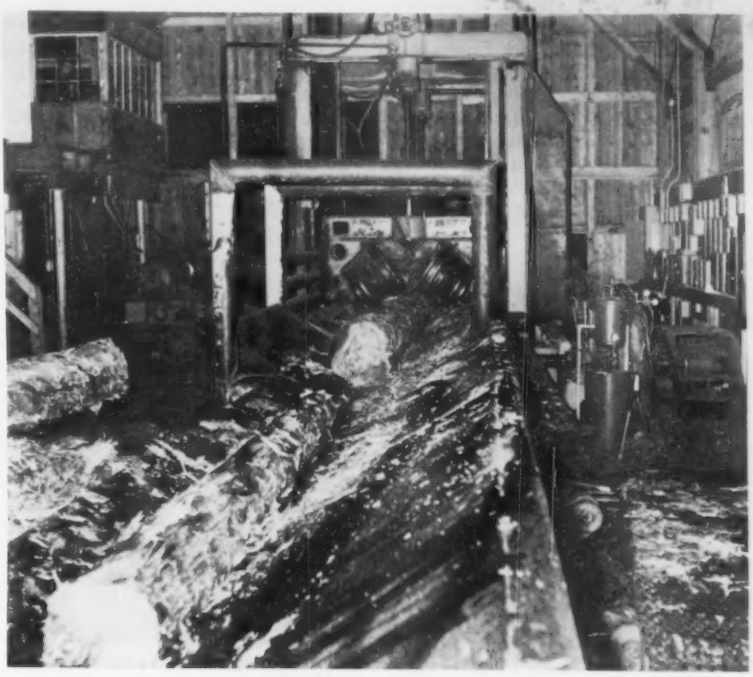
Actually, the slump in the lumber market a year ago might have forced sawmill shutdowns if it had not been for the new pulp industry. All the fir, pine and spruce species of Montana are converted to chips. In the future, wood waste from logging operations also will be brought in.

In place of the now extinct log pond, Intermountain has substituted a dry land system of fork lift unloading, sorting, storing and servicing to a new Nicholson mechanical Roto barker—one of the fastest in forest industries.

Delbert W. Collinson, of Collinson Engineering Co., Portland, Ore., was consultant to Intermountain in planning the unusual changes to meet this new market.

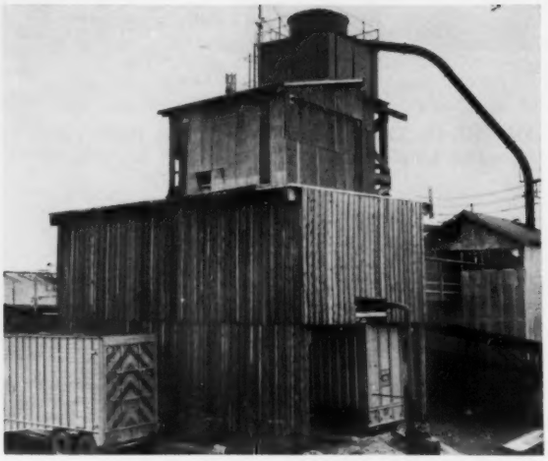
Chips now are providing Intermountain with an important 5% to 7% of its gross income. They make possible utilization of 75% of its former waste.

The speedy Nicholson barker has six abraiding tools. It is said to be the largest barker of this type, taking logs up to 43 in. diameter. It barks an average of 56 lineal ft. per min., which is only 8 ft. less than a Nicholson installation in a Southern mill, the latter reputedly the fastest in the country. But in the South the maximum log diameters approach 30 in. Top



ONE OF FASTEST BARKERS OF KIND. Log emerges from Nicholson mechancial Rotobarker which will take 43 in. diameter logs. Operator is in control booth at upper left. Ring may be raised for passing oversize logs.

BUCKING SAW IN CUT POSITION. This 86-in. Minder saw is located at point where bucked logs are directed to either sawmill (to left) or stud mill (to right). Overhead trolley takes saws to filing room. Chains in foreground provide storage between barker and mills.



CHIPPING CENTER, showing discharge pipe from Norman 66 in. chipper, surge bin and house for Sumner chip screen. Pipe, cyclone, steel surge bin and screw conveyor metering chips to screen were provided by American Sheet Metal Works.

speed for Intermountain is 70 to 80 ft. per min. The barger feed is driven by a General Electric 40 hp Amplidyne motor. A Gardner Denver air compressor is used.

Dry Land Sorting and Storage

The new land system of unloading, sorting, storing and barker servicing is done by two Clark Equipment Co. Michigan tractor loaders and a Wagner 30,000 lb. lumber jack. The Michigans busily scoot from point to point in the yard in carrying out their assignments. There were major advantages that came with this revolutionary change in sawmilling practice:

1. Since the wood comes largely from federal government lands, there were scaling problems with the U.S. Forest Service which had to be solved. Dumping the wood on arrival on the ground, instead of in water, made for more accurate scaling. Intermountain's scaler works from one end of the pile, the USFS scaler from the other. Previously purchases had been calculated unsatisfactorily by truck and woods scale.

2. Cleaning the dirt out of the bark is obviated by use of the barker; cleaning by immersion in the pond is no longer necessary. The bark is removed and that's the end of that.

3. With the advent of the fork lift equipment, dry yard handling became feasible.

This permits log sorting by species, which has these two major advantages.

(a) The mill can select and cut for the market whatever species is in demand at the moment.

(b) Mill runs prove to be less expensive when species are not mixed.

Where Wood Goes After Barker

Logs leaving the Nicholson barker enter a Moline conveyor for delivery to an 86 in. swing cutoff saw provided by J. W. Minder Chain & Gear Co. of Portland, Ore. This saw normally operates at five cuts per minute but is capable of eight cuts per minute, thus providing an in-line surge capacity.

The plant also has in-mill transfer storage for debarked logs. Logs are sorted at the cutoff station—the smaller logs going to a Scragg stud mill in 8 ft. lengths and the larger to the main sawmill.

Having this single entry system permits the bucking saw operator to grade and sort his logs. For example, he can cut a crooked 32 ft. fir to 8 ft. lengths, thus straightening it out, and send it to the stud mill. A lot of good wood is saved at this critical point by judicious sawing.

HORACE H. KOESSLER (left) is president and CAMERON J. (CAM) WARREN is vice president of operations of Intermountain Lumber Co.

Statistics on Chips

The production of chips for Waldorf's pulp mill runs about 3,000 units (2,400 lbs. to unit) per month. After barking, products here total between 80 and 90 million bd. ft. per year, divided as follows:

30%—chips
48%—lumber
14%—green sawdust
8%—dry shavings and sawdust

The green sawdust is utilized for steam production and is sold to the University of Montana and Montana Power Co. for its heating, and to farmers as soil amendment. It is mixed with dry sawdust shavings and bark before using.

Other Equipment

A Sumner Iron Works chip screen follows the Norman helical knife chipper. General Electric motors and Western Gear reducers are generally used in these operations. The log kicker to stud mill is driven by a Westinghouse Motocylinder. The

12-UNIT CHIP SCREEN in chipper house was supplied by Sumner Iron Works.

CHIPPER MACHINES and Engineering Norman 66-in. chipper and Louis Allis 250 hp special direct drive chipper motor.

chipper is driven by a 250 hp synchronous direct drive Louis Allis motor. Everything in the plant was done at reasonable cost, the operators say.

Horace H. Koessler, president; Cameron J. (Cam) Warren, vice president of operations, and H. S. Pennypacker vice president and sawmill supt. were the Intermountain company officials who did the planning for the entry of the company into the chip business.

Anaconda Lumber Division Uses Hansel Barker, 3 Chippers To Serve Pulp Mill

Another company "in the chips" as a result of the new pulp mill at Missoula, is the Anaconda Co's lumber division at Bonner, Mont. World-famed for its mines, Anaconda has for many years given extensive study to utilization of its timber holdings in Montana. Many in the pulp and paper industry will be surprised to know that Anaconda has for years had cellulose researchers working on its staff. The day may come when they are more actively involved in this industry, but for the present they are finding a lucrative outlet in supplying chips to the Waldorf mill.

Hansel Engineering Co., Lynwood, Wash., designed and installed a log haul, log barker, pulp house, cutoff saw, log kickers, transfer deck, log lift, three chippers and surge bin.

Pine, fir and larch for this 180,000 ft. per shift sawmill and 40,000 ft per shift stud mill makes special mine timbers flow from pond up the log slip through a 2-arm oscillating Hansel hydraulic barker operated on a 940 gpm supply of water from a Bingham pump. Logs vary from 6 in. to 5 ft. diameter and from 6 to 40 ft. lengths. Sorting for use is made at the cutoff saw. Clean slabs are fed into a 75 in. Hansel horizontal feed chipper which blows chips directly into a 25 unit surge bin and chips are screened on Rotex equipment. Overs go to a Hansel 36 in. rechipper.

A conveyor system engineered and installed by Rader Pneumatics Inc. of Portland, Ore., transports chips 1200 ft. There is also a 600 ft. Rader sawdust conveyor. From the Rader feeder chips are blown 1150 ft. by a Sutorbilt blower, through pipe, to an open car type loading station, with double tracks, each track holding six cars. The Rader equipment is credited with spreading chips evenly on cars and loading 25% more chips into a car than would be possible with conventional equipment, according to operators.

The Rader compaction loaders move crosswise of the cars.

A 7½ hp car puller, with an electronic control system wired by Industrial Components Inc., Portland, Ore., employs electric eyes to move cars forward and back to help even spreading. The system handles 20 units of chips per hour.

Sawdust is blown 550 ft. by a Rader Pneumatics system to a fuel bunker at a rate of 4 tons per hour. Barker is passed through a Jeffrey hog.

The pump for the barker is a Bingham 940 gpm, 1410 psi pump driven by a General Electric 1,000 hp synchronous motor via a Western Gear Works high speed reducer. A Bingham 940 gpm, 180 psi pump is used as a booster. The chips travel 15 miles by rail to the Missoula mill.

And so it goes at the other Montana sawmills serving Waldorf. Diamond Gardner Corp.'s sawmill at Superior uses a Hansel hydraulic barker and Hansel chipper. The Rother (in Missoula) sawmill has a Nicholson barker and Hansel chipper.

HYDRAULICALLY CLEANING LOGS to bare wood at 100 fpm at Anaconda Co.'s Bonner, Mont. plant with automatic Hansel 48-in. arm type three-nozzle barker. Main pump, driven by 1,000-hp motor, delivers 940 gpm water to barker at 1,500 psi.

Price ..... Dawson

FOR THE BEST WOODLANDS SECTION PAPER on a subject other than mechanization the Price Bros. Award went to H. J. Dawson of Quebec North Shore Paper Co. His subject: feeding systems in woods camps. It was presented by A. C. Price, president, Price Bros. & Co., Ltd.

Martin ..... Prebble ..... Simard

ELLWOOD WILSON AWARD WAS WON jointly by W. H. Martin and H. G. Simard, both of Canadian International Paper Co., for their evaluation of weight as a basis of wood measurement. Presentation was by John S. Prebble of Anglo-Canadian Pulp & Paper Mills Ltd.

Watch Your Costs, Pulpwood Loggers

CPPA's Robert Fowler warns eastern Canada woodlands operators of growing competition. New Techniques discussed at Montreal.

● Conventional fiber sources will probably not be adequate to meet the world's future requirements. As a result, according to Robert M. Fowler, it's likely that hardwoods, bagasse and other fibers will have to be used increasingly in the manufacture of pulp and paper products. Mr. Fowler is president of the Canadian Pulp & Paper Assn.

Addressing the 41st annual meeting of CPPA's Woodlands Section, Mr. Fowler expressed optimism as to the future of the Canadian industry and its ability to meet world demand. But, he warned that total 1959 production of pulp and paper will be close to the peak attained in 1956. For that reason it will be necessary to increase pulpwood output substantially.

"Today, the economic barometer is rising, and improvement in the general economy is beginning to show itself in increased demands for pulp and paper products," Mr. Fowler continued. He said that the Canadian industry should not again contemplate operation at 100% capacity and should not regard this as a normal or desirable condition, since while working at capacity it is impossible to meet the full needs of customers.

Strict Attention to Costs

Capacity operation, however, necessitates maintaining a reasonable reserve or production ability, the speaker advised, and this has direct implications for the woodlands operator. For one thing, it means the absolute necessity of paying strict attention to the costs of producing wood.

"The old easy days when all emphasis was on production—without heavy pressures for efficient and economical production, are gone," Mr. Fowler declared. "Expenditures on woodlands in the face of lower operating costs and lower profit margins will have to be justified not only in terms of production, but also in terms of costs.

"It will be necessary for woodlands operators to be more cost conscious and more skillful in their expenditure proposals than they have had to be during the past 15 or 20 years. They will be faced with the need to recommend new expenditures to maintain and expand wood production and to keep the woodlands operations efficient and healthy; but, they will in the future be required to put forward their proposals in much greater detail, with more care and research in preparation and with greater skill and vigor in their advocacy."

Harrison New Chairman

Elected chairman of the Woodlands Section during the recent Montreal meeting was F. A. Harrison, woodlands vice pres. for Canadian International Paper Co. Newly elected vice chairman is A. H. Burk, vice pres. and woods mgr. for KVP Co. Ltd., Espanola, Ont.

In for close scrutiny at the meeting was mechanized logging—particularly the handling of logs in large bunches and in tree lengths. It was generally

agreed that the greatest possibility for savings is in the movement of logs from the stump to the roadside, although the distance is usually less than half a mile. This was the view expressed by B. A. Logan, Howard Smith Paper Mills Ltd. Others on the mechanized logging program were G. A. Gange, Ontario Paper Co. Ltd., and M. McKay, Great Lakes Paper Co. Ltd.

Research Vital to Future

"We must encourage and expand programs of research to find new and improved techniques of harvesting wood as well as fundamental research into forestry generally," said Maxwell MacLaggen, divisional woods mgr. for Abitibi Power & Paper Co. Ltd. "Outside Canada, only the Soviet Union has forest resources capable of greatly increased output, and the Russians are rapidly developing their logging industry."

Productivity of tree farms and other privately-owned woodlots was the subject of a report by Dr. R. W. Marquis, director of the USFS Northeastern Forest Experiment Station, Upper Darby, Pa. He reported that in the United States privately-owned woodlands occupy 265,000,000 acres, or 55% of the total commercial forest area. In Canada virtually all the productive forest area is owned by the Crown and leased to forest industries. Only about 14% is owned privately.

"In order to improve tree farm yield we must discard some of our traditional 'folklore'," Dr. Marquis said. "It is essential that we determine exactly why people own woodlots, what they expect from them and what they are willing to put into them."

Tree farms and other privately-owned woodlots now account for almost one third of the 14,000,000 cords of pulpwood harvested annually in Canada.

Mechanization on Small Lots

A successfully-administered program for the mechanized handling of pulpwood harvested on small private woodlots was outlined by J. F. Walker of Ontario Paper. Describing his firm's operations on Manitoulin Is. in Lake Huron, he pointed out that farmers in the area each harvest and sell an annual crop of less than 100 cords. For this reason they had been traditionally reluctant to buy mechanized equipment, this although its was becoming increasingly necessary because of a shortage of manpower. To meet the situation Ontario Paper bought and experimented with a mechanical barker that proved economical, as did a pallet loading system for use in trucking wood.

R. M. FOWLER: "The old easy days of pulpwood production are gone."

F. A. HARRISON, newly elected chairman of CPPA's Woodlands Section.

Developments in the use of aerial photography as an aid to forest management were reported by H. E. Seely of the Dept. of Northern Affairs and National Resources, Ottawa. One of the techniques under study, he said, is the use of "camouflage detection film." In woods photographs taken with this film new foliage appears vivid red, while dead foliage appears blue or gray-green. Pictures taken in 1957, for instance, in the budworm-infested areas of New Brunswick clearly delineated the dead trees.

Tree breeding as a means of forest improvement and its relation to the output of forest products was discussed by P. N. Joranson of the Institute of Paper Chemistry, Appleton, Wis.

Managing 2,000,000 acres of leased woodlands with the aid of automatic business machines was outlined by D. I. Crossley, chief forester for North Western Pulp & Power Ltd. The continuous forest inventory is based on data processing and is a vital factor in supplying pulpwood on a sustained-yield basis to the company's 450-ton kraft pulp mill at Hinton, Alta. The system differs from those customarily in use in that individual trees are tagged and careful records kept of growth and other factors affecting tree health.

For Outstanding Accomplishment

Winner of the J. A. Rothwell Award for meritorious work on behalf of forest conservation was Mr. Harrison, new section chairman. The Ellwood Wilson Award for the most effective industrial application of research was won by W. H. Martin and H. G. Simard, both of CIP. For the year's best woodlands paper on a subject other than mechanization the Price Bros. Award was presented to H. J. Dawson, Quebec North Shore Paper Co., while C. H. Duff of CIP took the mechanization prize. J. T. Smith of Consolidated Paper Corp. Ltd. won the award presented by his firm for the best paper on mechanical hauling.

CZ Fertilizer Packs a Wallop

Nutrient-packed fertilizer developed by Crown Zellerbach Corp. forestry research at Camas, Wash., delivers a real wallop. Experimental plantings of Douglas and white fir, Sitka spruce and Monterey pine have achieved three-year growth in two years. Cost is said to be less than $10 per acre.

A single fertilizer pellet (about the size and shape of a candy lifesaver) dropped into the planting hole with the seedling is said to nourish the tree continuously over an extended period. CZ foresters report that beneficial effects continue into the third year, substantially shortening the growth cycle and increasing the productive capacity of timberlands.

Fertilizer tests with two-year-old Douglas fir seedlings demonstrated a 43% greater average growth than similar experiments with identical seedlings planted without fertilization. During the second year the fertilized trees grew at a rate 56% faster than the control group. In addition to increased growth, fertilizer application appears to result in higher survival.

According to George H. Schroeder, CZ chief forester, expanded field tests are being conducted during the 1959 planting season on 10 company tree farms in the Pacific Northwest.

The fertilizer was developed by Ray Austin, head of forest research at Camas, and patents have been applied for by Crown Zellerbach. Production and marketing of the pellets have been assigned to Mora Chemical Corp., Seattle.

"Saw Kerf Chips" for Paper

The sawdust pile may be a thing of the past.

A new type saw blade developed by a Georgia lumberman is turning out "saw kerf chips," a modified sawdust. Their use in papermaking is being tested at Rayonier Inc.'s pulp mill in Fernandina Beach, Fla.

The blade that may open an almost unlimited market for sawmill waste has only one-fifth the number of teeth found in conventional saws. Since each tooth takes a larger bite, chips of wood rather than normal "dust" are produced. The fiber length of these chips has been long enough to be used in the manufacture of pulp.

J. T. Griffin, mgr. of Wells-Griffin Lumber Co. in Valdosta, Ga., developed the blade in association with Simonds Saw & Steel Co. and has recently announced the success of small-scale pilot tests.

The new saw is scheduled to receive thorough testing at the U. S. Forest Products Laboratory in Madison, Wis.

Rufus H. Page, forest products technologist for the U. S. Forest Service and the Georgia Forest Commission, has announced that the Madison tests would not be completed for several months. At that time, he said, the results will be available to the public.

The great potential in wood residue was cited by Mr. Page. "On the average," he said, "55% of the volume of a log is residue in the manufacture of rough green lumber in conventional saw methods." Whereas log debarkers and pulpwood chippers have provided a market for slabs, trimmings and other solid residues, until now sawdust has had no large-scale use. Mr. Page pointed out that for every 1,000 board ft. of lumber produced a 1-ton residue of sawdust remains.

Page Griffin Cumbie Davis

EXAMINING "SAW KERF CHIPS" of a new type saw blade are R. H. PAGE, forest products technologist; J. T. GRIFFIN, developer of the process and mgr. of Wells-Griffin Lumber Co.; J. D. CUMBIE of Union Bag-Camp Paper Corp., and ERNEST P. DAVIS of Rayonier.

Mr. Griffin, father of the innovation, is ready to furnish free of charge any quantity of the chips to anyone interested in testing their potential. It is not necessary, he maintains, to make extra allowances for planing boards produced by the saw. According to preliminary tests, the new unit requires less power and is more durable than conventional saws, and the kerf (or gap) of the cut is no wider.

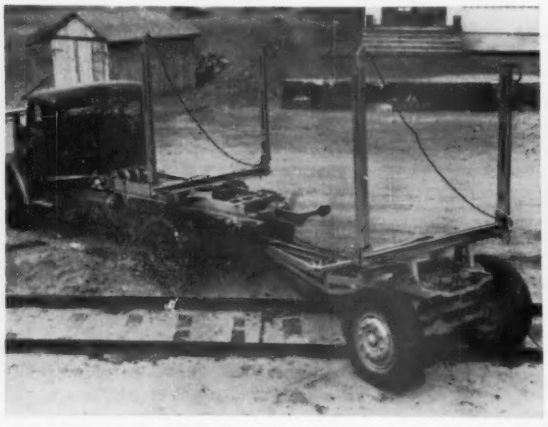
Norwegian Log Loader Saves Time, Labor

Some of the "back-break" has been taken out of loading heavy logs through use of a Norwegian development—the Isachsen log loader. The unit makes it possible for two men to load up to 875 cu. ft. of green or dry logs in 10 min.

Produced by Ludvik Isachsen Mfg. Co. of Larvik, Norway, the log loader consists of two U-shaped log frames; one winch with two drums; two wire releaser mechanisms, and two 85-ft. lengths of ⅝-in. wire rope. Safety of operation is "built in."

The stakes are strongly hinged and have a locking mechanism operated from the opposite side of the truck. The one-piece stakes on one side are equipped with revolving pulleys and serve as loading cranes; those on the other side are three-sectioned to facilitate loading. As the load grows in height, these stakes on the loading side are extended to contain the logs.

The top sections of both jointed stakes on the loading side are removed and a "shark jaw" placed atop the two remaining sections. Loading skids are positioned with one end resting on the lips of the shark jaw and the two wire ropes pulled out to the logs and securely fastened. The load is pulled up to the truck bed by the winch. When the load is positioned, the load is freed by pulling the ropes attached to a releaser unit.

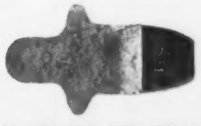


U-SHAPED FRAMES CAN BE MOUNTED on any truck or trailer.

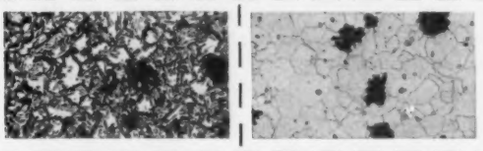
EASE OF LOGGING OPERATION is a feature of this loader.

POWERFUL CHAIN FOR PULPWOOD HANDLING

Many center link and sidebar attachments are available to suit a variety of conveyor applications. WS attachment is shown above.



File-hard surfaces of Flint-Rim sprockets help maintain efficient, dependable performance of chain and sprockets . . . prolong chain life.



Promal or file-hard Promal chain can be furnished for unusually abrasive conditions. Dark areas in Promal structures (left) show stronger, stiffer reinforcing material. Malleable (right) shows white "free-iron," black is soft carbon nodules.

Broad sliding surfaces of Link-Belt C-132 chain hold up longer on drag conveyors

Yes, with its broad top and bottom surfaces, Link-Belt C-132 chain is particularly resistant to the sliding wear encountered on carrying and return runs of drag conveyors. This high durability pays off in low maintenance, minimum shutdowns.

C-132 chain combines cast center links with steel sidebars connected by steel pins — offers ample, live joint bearing area to withstand pulpwood punishment. For further facts, contact your nearest Link-Belt office or authorized stock-carrying distributor, listed under CHAINS in the yellow pages of your phone directory. Or write for new Catalog 1050.

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Personal Notes

THOMAS G. WRIGHT, chief forester for Canadian Forest Products Ltd., is new chairman of the British Columbia branch of the Canadian Forestry Assn. Mr. Wright established, in his own name, the first certified tree farm in the province. . . . American Box Board Co.'s new supt. of woods operations for the northeastern lower peninsula area is ROBERT G. BAHRMAN. A graduate forester, he will be responsible to the regional supt. of field wood procurement, IVAN OWEN. Mr. Bahrman has for the past few years been employed by American Box Board at Filer City, Mich. His responsibilities will be primarily in the field of pulpwood procurement for the company's expanding pulp and paperboard mill. . . . J. J. WILEY JR. steps up as director of forest research and development for West Virginia Pulp & Paper Co. He succeeds PETER LANNAN, who recently resigned. Mr. Wiley joined the firm in 1942 and has been headquartered at Summerville, S. C., as coordinator of timber management.

C. B. DUNHAM, director of forest operations for Columbia Cellulose Co. Ltd., has been elected chairman of the British Columbia Loggers Assn. . . . The appointment of R. M. WOODBRIDGE as gen. supervisor of the agriculture, logging and construction markets in the sales development div. has been announced by Caterpillar Tractor Co. . . . St. Regis Paper Co. has promoted ROBERT L. DELONG, Tacoma, Wash., from asst. to the logging mgr. to asst. to PAUL M. DUNN, technical director of forestry. EARLE BERGER, formerly purchasing agent for Tacoma mills, becomes western regional puchasing mgr. . . . LOUIS F. KALMAR has been named asst. to the gen. mgr. of Continental Can Co.'s newly formed Woodlands div. ARTHUR J. POWERS becomes control officer and chief accountant. Mr. Kalmar previously held the position of engineering and development forester when the Woodlands div. was a department of Continental's Containerboard & Kraft Paper div. Mr. Powers was plant accountant at that division's Hodge, La. facility.

FRANCOIS MATTE is the new chief forester for Howard Smith Paper Mills Ltd. and subsidiary companies. Assisting him will be W. A. WHITELAW, asst. to the chief forester; LEOPOLD DION, asst. chief forester for Quebec; D. G. E. GARRIS, asst. chief forester for Ontario. R. L. B. HUNTER has been named woodlands mgr. for Quebec, with headquarters in Quebec City; B. E. JARVIS, asst. woodlands mgr., Quebec North at Cedar Rapids, and E. D. GARON, asst. woodlands mgr. for Quebec East at Quebec City. . . . ELMER BOE, asst. personnel supervisor at the Fraser mills of the Canadian Western div. of Crown Zellerbach Canada Ltd., has been named personnel coordinator for the Comox Logging div. He has been succeeded at Fraser mills by DOUGLAS ROBSON, industrial relations supervisor for the Richmond div.

The Engineering div. of the United States Forest Service at Portland, Ore., has added two highway engineers to its staff: CLEMENT W. WEST, formerly logging engineer at J. Neils Lumber Co. and for the past three years in highway design and transportation for the USFS at Missoula, Mont., and HOWARD F. EMRICH JR., for the past two years an engineer at the Big Bend National Park in Texas. . . . CARL V. SAHLIN, timber dept. mgr. for Puget Sound Pulp & Timber Co., and Mrs. Sahlin spent their winter vacation in Hawaii.

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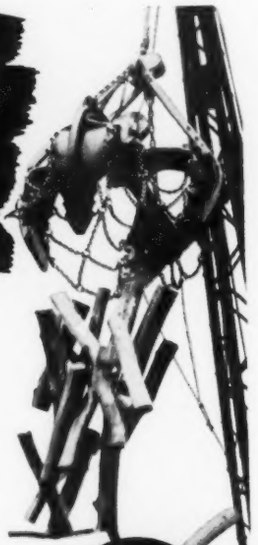

Meeting every test, as never before attained, Owen Grapples are being installed by pulpwood handlers in ever increasing numbers.

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Speed and ease of operation—

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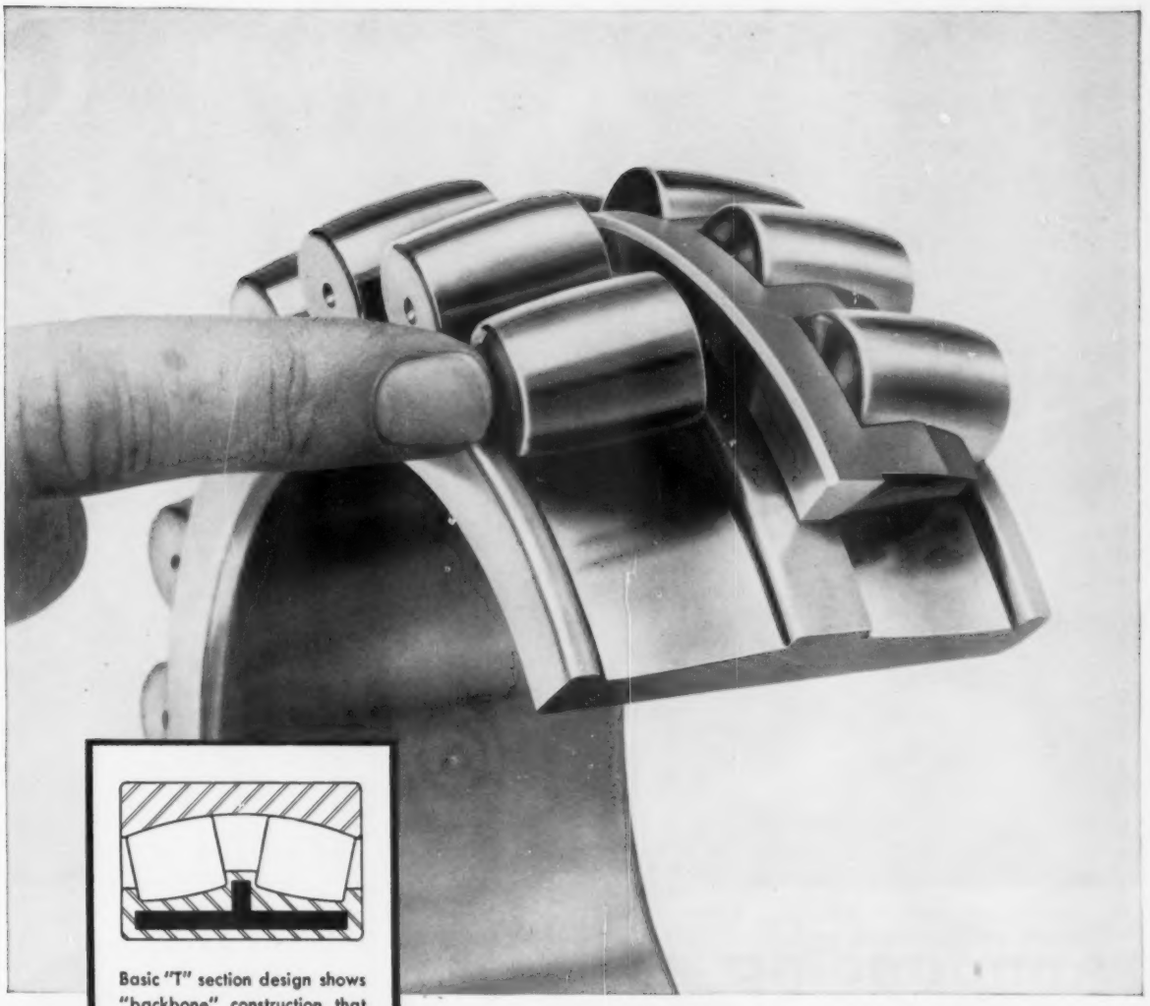
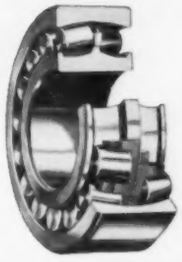


Basic "T" section design shows "backbone" construction that insures positive roller guidance and stability without skewing under all load conditions.



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This "bearing with the backbone" insures true rolling motion . . . prevents stress concentration . . . means minimum friction. It makes possible open-end cage design, too, with no shrouds to impede circulation of lubricant to bearing contact surfaces. There is less heating and more positive lubrication.

The integral center guide flange is adapted from the same principle used in the design of Torrington Tapered Roller Bearings. This refinement is typical of Torrington's uncompromising engineering that assures you the ultimate in bearing performance. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

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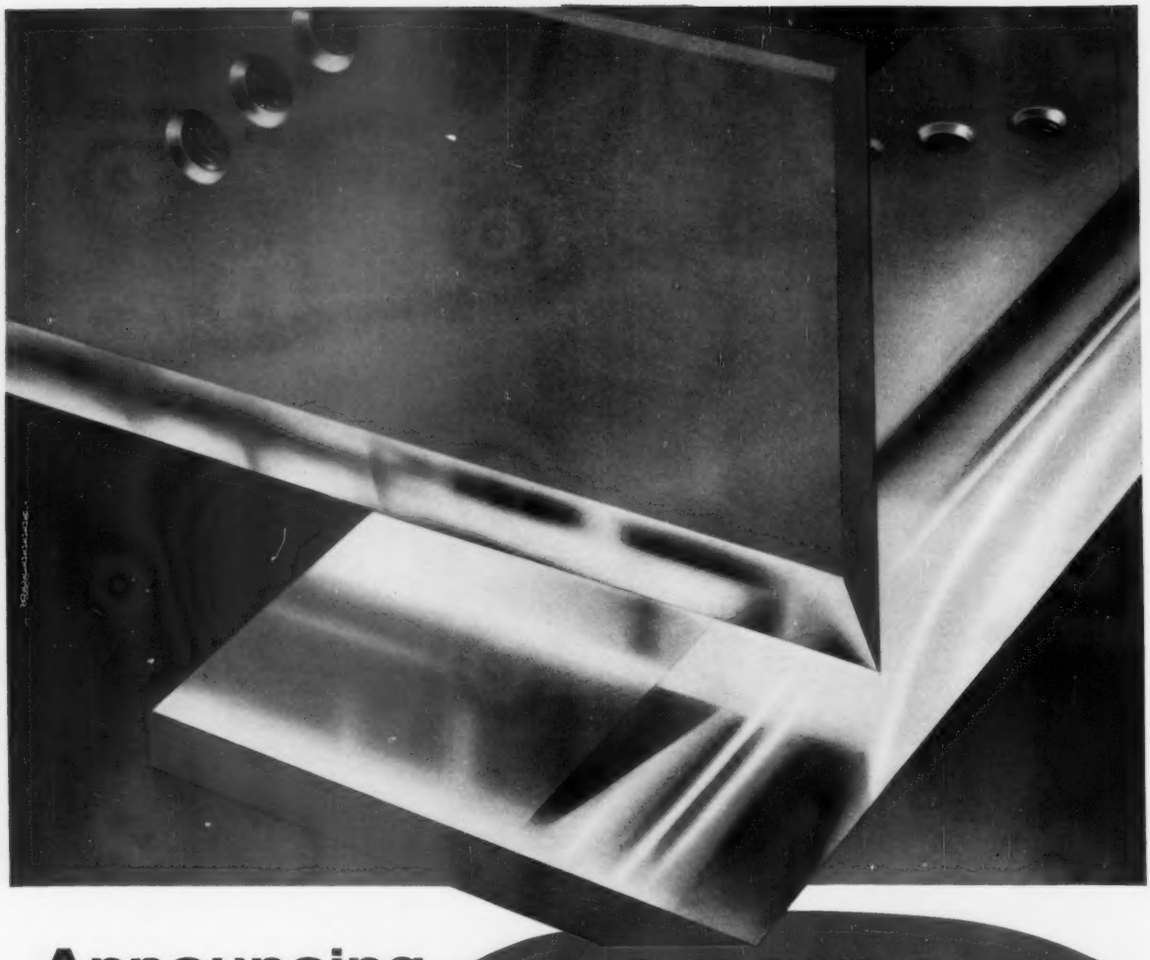

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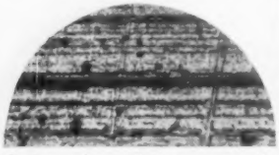
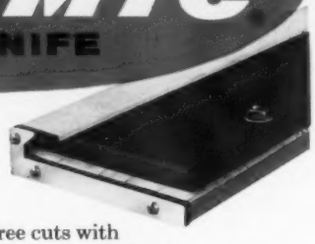
New Simonds "Si-Namic" Knife finish (50X) . . . a controlled super-smooth, uniform surface (produced by a patented process) that surpasses all other finishes.



Surface of so-called super-smooth finish knives (50X), produced by other polishing procedures, shows irregular surface conditions left by such processes.



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Simonds new "SI-NAMIC" Paper Knife . . . a premium quality knife *at regular price* . . .

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PULP & PAPER

Strictly Personal

Northeast

FRANK J. MCCOURT steps up as asst. mgr. of the York Haven, Pa. mill of International Paper Co. . . . FRITZ MAIER moves from Deferiet, N.Y., to St. Regis Paper Co.'s New York offices as technical service representative. . . . ED WAFUL moves up as chief chemist at St. Regis' Carthage and Herrings, N.Y., mills.

HAROLD L. PECKHAN, of Oxford Paper Co. is chairman, Metropolitan district, Empire State TAPPI; FRANK R. MARCHETTI, Titanium Pigment Corp., is chairman-elect; ALFRED M. HARTLEY JR., Nopco Chemical Co., is sec.-treas.; . . . CON CARRANO, James Carrano's Sons, is publicity chairman and DON GAMBLE, DuPont Co., is membership chairman. . . . DONALD B. KIMBALL, mgr. of paper manufacturing operations at the Kodak Park Works for Eastman Kodak Co., retires after 31 years' service. He is succeeded by JOHN P. HELPHREY, asst. mgr. of paper manufacturing; WILLIS H. JENNENS steps up to asst. mgr. . . . MARK A. SILEGY is now gen. sales mgr. of Monadnock Paper Mills Inc.

DR. RICHARD E. DURST, professor of chemical engineering at the University of Maine, is now president of the Maine Society of Professional Engineers. . . . VIRGIL M. ELLIOTT has joined the pulp, paper and paperboard subdivision of the Forest Products div. of the BDSA. . . .

Cadwallader

Hoge

Oxford Promotions

RICHARD F. CADWALLADER, formerly asst. treasurer, becomes controller, Oxford Paper Co. He's a graduate of Harvard U. and Harvard Graduate School of Business Administration, had been with Alco-Gravure Division of Publication Corp. before joining Oxford in 1951.

DR. WILLIAM HOGE is director of technical specialties development for Oxford, a new department, will report to Harold M. Annis, vice pres., research and development. He's a graduate of Ohio State and The Institute of Paper Chemistry. HAROLD BUCK moves up to group leader for technical specialties product engineering; DR. VICTOR MATTSON, to group leader for technical specialties research.

FRANK I. PETERSON, father of FRANK T. PETERSON, president of the Black-Clawson Co., died April 11. Swedish-born, he began his career in the industry at the Fengersfors Paper Mills in Sweden, came to Canada in 1911 as first paper mill supt. of the Wayagamack Kraft mill (now Consolidated Paper Corp. Ltd's. Three Rivers, Que. plant), later moved to American Writing Paper Corp., Holyoke, Mass., where he became a specialist in facial and other tissue grades.

DEREK G. CURRIE, vice pres. of Standard Packaging Corp. and mgr. of the Eastern Co. div., has resigned. His activities will be assumed by the divisional exec. committee comprising J. A. PATTERSON, chairman; FRANK A. KNIGHT; CHARLES DEZEMLER, and DWIGHT B. DEMERITT. . . . RUSSELL HAMILTON moves up as resident mgr. of St. Regis Paper Co.'s East Pepperell, Mass. mill. FRANK J. GONDEK transfers from Herrings, N.Y., to East Pepperell. . . . R. W. PHELPS, chief engineer Black-Clawson Co.'s. Dilts div., has been promoted to mgr. of engineering and product development; JAMES J. MELEAD, from asst. chief engineer, and JACK DAIN to asst. sales mgr. . . . ANDREW M. MCBURNEY, vice pres. of sales, at Oxford Paper Co., has been elected a director of the company.

JOHN S. WALDEN has joined West Virginia Pulp & Paper Co. in domestic woodpulp sales. He was formerly with Stora Kopparberg Corp., Standard Paper Mfg. Co. and Manchester Board & Paper Co. Inc. . . . W. M. MCFEELY, industrial relations vice pres. for Riegel Paper Corp., is now vice pres., organization, for both Riegel Paper and Riegel Textile Corp. Director of industrial relations for Riegel Paper is G. W. CLARK; R. A. WARNER is supervisor of industrial relations, and P. V. KOLONIA becomes placement supervisor. J. T. ALLMON moves to supervisor of management development.

N. G. MCLEAN, formerly chief engineer and paper mill mgr. for Finch, Pruyn & Co., has joined Personal Products Corp. as production mgr. of its Cel-Fibre div. . . . JAMES A. FOXGROVER, who joined Perkins-Goodwin Co. last year as asst. to the president, has been elected a director. . . . ALFRED W. ANISH is now market development mgr. for Latex Fiber Industries Inc. at Beaver Falls, N.Y. . . . At Hammermill Paper Co.: VICTOR OAKES is now chief project engineer; ROBERT SCEIFORD, plant project engineer and MAX LEAVY, senior electrical engineer. A native of Uruguay, Mr. Oakes came to the U.S. at an early age, graduated from Syracuse Univ. in electrical engineering and joined Hammermill in 1952. Mr. Sceiford joined the firm in 1947 as a draftsman. . . .

Hale Named Mgr., Paper Sales, Minerals & Chemicals Corp.

G. A. ("GERRY") HALE has assumed sales management for Edgar coatings and filler clays for Minerals & Chemicals Corp. of America. He joined the firm in 1952 following graduation from the Paper Technology dept., Western Michigan Univ.

Hurlbut Becomes Exec. Vice Pres., American Paper Exports

WILLIAM D. HURLBUT, with the export div. of International Paper Co. since 1956, has been named exec. vice pres. of American Paper Exports Inc. He joined IPCo in 1952 in sales. Mr. Hurlbut's father, the late WILLIAM N., was vice pres. and a director of International Paper.

Voit Named Ralston Purina Sales Mgr.

JOSEPH F. VOIT, a specialist in the protein field and well known for his knowledge of coating formulations, has joined the Special Soy Products div. of Ralston Purina Co. at the company's headquarters in St. Louis, Mo. He was formerly with the Chemurgy div. of Central Soya Co. Inc. and prior to that had been chief chemist and technical sales engineer for the Soya Protein div. of Drackett Co. Manager of Ralston Purina's new Special Soy Products div. is W. E. TJOSSEM.

PULP & PAPER

Strictly Personal

JOSEPH E. HOFFMAN and GEORGE J. HULCHER JR. are now vice presidents of Standard Paper Mfg. Co. . . . E. E. STRICKLAND is mgr. of General Products div. sales for Allis-Chalmers Mfg. Co. in the northeast region. He headquarters in New York, N.Y.

HENRY HARMSEN has been elected asst. vice pres. of manufacturing for Paterson Parchment Paper Co., Bristol, Pa., to succeed J. ROY DUFFORD, who has become divisional vice pres. of industrial relations. Mr. Harmsen was formerly production mgr. . . . HENRY B. PUFF, Chicago district sales mgr., has been named asst. product mgr. for resins in the Durez Plastics div. of Hooker Chemical Corp. At the same time, EDWIN E. WOODMAN was named to succeed Mr. Puff in Chicago. . . . Clinton Corn Processing Co., Clinton, Iowa, has named GEORGE H. BURNS Philadelphia district mgr. . . . PHILIP M. DINKINS has been reelected president and—in addition—chief exec. officer of General Aniline & Film Corp. JOHN HILLDRING, who had served as chief exec. officer, was reelected chairman of the board. . . . PAUL A. WILKS, vice pres. and treas. of Strathmore Paper Co., W. Springfield, Mass., has been elected a national director of the Controllers Institute of America.

J. FRANKLIN ANDERSON has retired as vice pres. of Continental-Diamond Fibre Corp., a subsidiary of Budd Co. He joined CDF in 1912. . . . DOUGLAS K. SAWYER has been elected asst. comptroller of St. Regis Paper Co. Formerly asst. to the comptroller, he has been with the firm since 1944 and has served as divisional comptroller and budget mgr. . . . Bailey Meter Co. has opened a New Jersey sales office at 110 Halsted St., East Orange. Managing the office is H. C. WHEATON, who is also mgr. of the New York district office.

DR. A. H. CROUP has been named development physicist in the research and development section at the Hammermill Paper Co. laboratory in Erie, Pa. He was formerly mgr. of laboratories. DR. RICHARD W. BROWN, asst. mgr. of laboratories, becomes laboratory director.—Maurice R. Castagne.

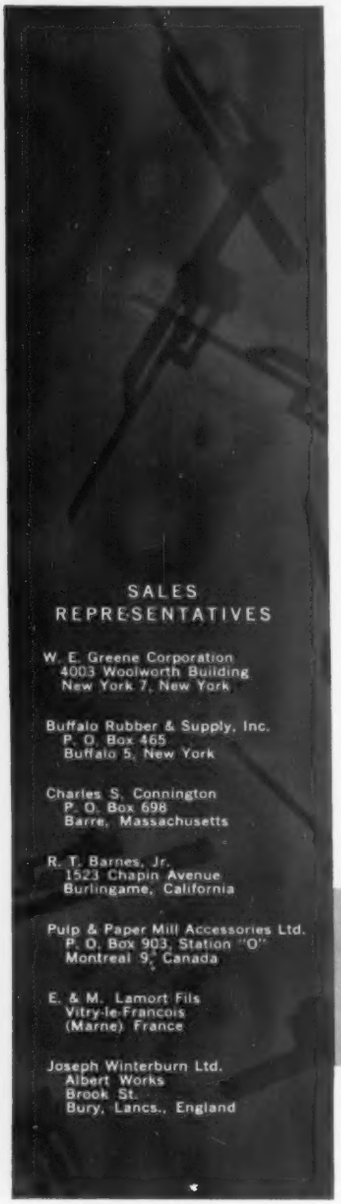
Donald W. Curtis Moves from Beloit to E. D. Jones

Mr. Curtis, who has been with Jones' parent firm—Beloit Iron Works—more than 10 years, becomes asst. to the president of the Pittsfield, Mass. company. As a member of the executive staff he will actively participate in a program to expand Jones facilities and services. Mr. Curtis is a graduate of Johns Hopkins Univ. and attended the Institute of Paper Chemistry.

Allan Hyer Dies

Allan Hyer, for many years prominent in the pulp and paper industry, died recently in Cincinnati. He was 69 and had been ill since late in February.

Mr. Hyer joined Black-Clawson Co. in 1918 and subsequently became vice pres. of Bagley & Sewall Co. When that firm became part of the B-C organization, he returned to Black-Clawson in an executive capacity. Mr. Hyer retired in 1956 and a year later joined Pusey & Jones Corp. as a consultant. Illness forced him to relinquish his position.



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Few qualifications for manufacturing count more than experience. And when experience has been concentrated within a specialized line of endeavor it adds value to the product.

Lodding Doctors carry that extra value derived from experience — experience accumulated over thirty years of specialization in the manufacture of doctors, doctor blades, blade holders and their accessories. During this period, Lodding has built and installed doctors for every conceivable doctoring application, under all conditions and of every type and size, up to and including the Great Lakes Paper Company's 340 inch newsprint machine.

Installations of Lodding Doctors are found in nearly every paper mill in this country and in many mills abroad. Each was precision engineered and precision manufactured for the specific roll being doctored.

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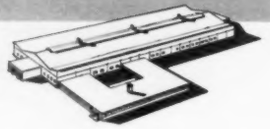

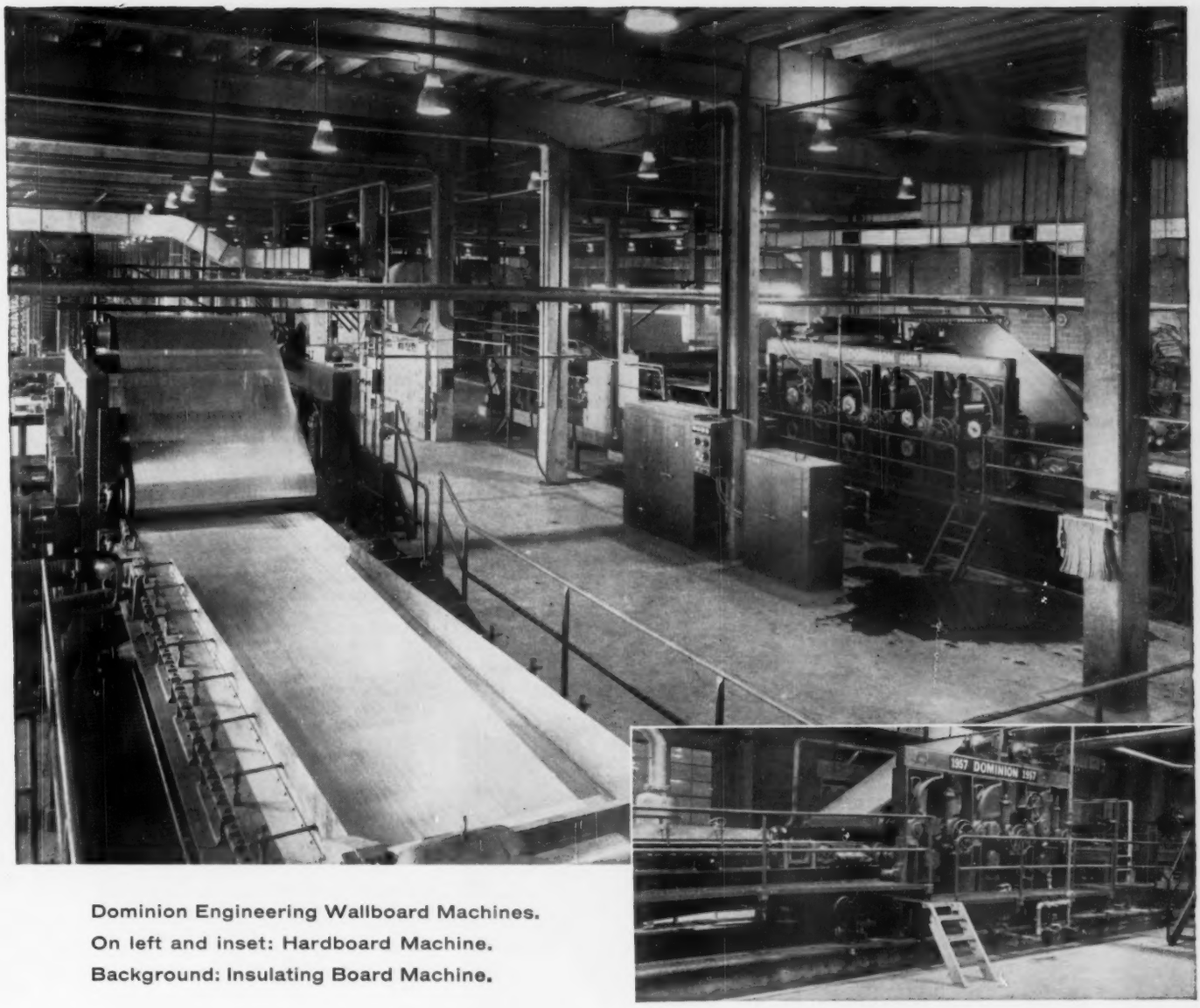

Dominion Engineering Wallboard Machines.
On left and inset: Hardboard Machine.
Background: Insulating Board Machine.

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Hardboard and Insulating Board Machines, installed at the Saskatoon Mill of the Prairie Fibreboard Company.

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New Officers at Container Laboratories

Container Laboratories Inc., Chicago, has elected JAMES A. SARGEANT president and treas. to succeed ALLYN C. BEARDSELL, who becomes vice pres. and gen. mgr. with headquarters in New York, N.Y. (Mr. Sargeant, formerly vice pres. and technical director, and other employes recently purchased controlling interest in the firm from ALBERT LUHRS, exec. mgr. of the Fibre Box Assn., who founded the company in 1923.)

Other new officers elected by the board of directors include: THOMAS P. WHARTON, vice pres. and mgr. of the Washington, D.C. div., and JEROME J. KIPNEES, vice pres. and mgr. of the New York and Philadelphia divisions.

John B. Calkin Dies

John B. Calkin, president of Calkin & Bayley Inc., New York, N. Y. industrial consultants, died recently. Pending a suitable appointment, Board Chairman George T. Bayley is assuming his duties.

For many years associated with the pulp and paper industry as a chemical engineer and technologist, Mr. Calkin had served since 1949 as a consultant to the chemical and chemical process industries. In 1957 he became president of Calkin & Bayley. Mr. Calkin wrote many articles on paper technology.

Scofield ..... Haskell ..... Richmond

Scofield Promoted by Rayonier

GEORGE E. SCOFIELD has been named gen. mgr. of Rayonier Inc.'s cellulose operations. He comes to this newly created executive post from the Jesup (Ga.) div., where he was res. mgr.

Succeeding Mr. Scofield at Jesup is BLANTON W. HASKELL, formerly res. mgr. at the Fernandina (Fla.) div. New man at Fernandina is BRYAN L. RAUSCHERT, who was previously asst. res. mgr. at the Grays Harbor (Wash.) div.

Other Rayonier manufacturing dept. appointments include: LOWELL M. MCGINNIS, asst. res. mgr. at Grays Harbor, and JOHN F. HOOPER, asst. res. mgr. at the Port Angeles (Wash.) div. to succeed R. H. RICHMOND, who is returning to the Rayonier Canadian subsidiary, Alaska Pine & Cellulose Ltd., Vancouver, B. C., as mgr. of the cellulose div. Mr. Richmond has been with Alaska Pine (and Rayonier) since 1933 and was at one time res. mgr. of the Port Alice, B. C. cellulose mill.

Midwest

ARTHUR A. BERNHARDT has been named mgr. of the Nekoosa, Wis. Mill of Nekoosa-Edwards Paper Co. He was formerly supt. of the kraft mill at Nekoosa. . . . L. F. THOMPSON, mgr. of the Hinde & Dauch div. of West Virginia Pulp & Paper Co. at Sandusky, O. has been elected a director of the Fibre Box Assn. Mr. Thompson first joined the Charleston, S.C. mill of West Virginia when it began operations in 1936, becoming asst. to the mill mgr. in 1949, and a year later, resident mgr. He was elected to the company's board of directors in 1951 and in 1958 was named mgr. of the Hinde & Dauch div.

Appointment of HOMER P. BINDER as consultant and of HUGH L. ROSS as mgr. of the West Allis Pump dept. of the General Products div. has been announced by Allis-Chalmers Mfg. Co. Mr. Binder joined Allis-Chalmers in 1911 and has been mgr. of the dept. since 1942, while Mr. Ross was formerly asst. mgr. of the Centrifugal Pump dept. . . . L. F. BUNDE has joined the Central Engineering dept. of Allied Paper Corp. as staff engineer. He has been associated with the pulp, paper and board industry since 1925 and prior to joining the Allied staff acted as a consulting engineer. His headquarters are at the Bryant mill in Kalamazoo.

AIRFLOAT TABLE

Air under pressure, flowing up under the load, provides the "lift" for light-as-a-cloud, breeze-free movement. Just a push of the hand sends paper stack skimming—no drag—no creep—it *glides* on a film of air, wherever you want it to go, without the slightest vertical misalignment of the sheets.

The secret of the overwhelming popularity of LAMB Airfloat Tables in pulp and paper mills and other paper handling establishments lies in the spring-operated ball valves set into the table top. A load placed on the surface depresses the ball valves, allows low-pressure air to escape under the load, providing a film of rapidly moving air between load and table. Available for manual operation or use with mechanical-type pusher. Unit table construction provides complete versatility of arrangement in setting up a conveyor line. Tables built for a lifetime of satisfactory service.

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☐ Wall chart of handling precautions

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Strictly Personal

HOWARD J. LACY II, long prominent in the container industry, died recently in Indianapolis. He was 53. Mr. Lacy was president of U. S. Corrugated-Fibre Box Co., a director of Knox Glass Inc. and Albermarle Paper Co. . . . THOMAS M. STILP has been named Wisconsin sales engineer by Appleton Machine Co. He represents the firm in all sales divisions. Mr. Stilp has been associated with Appleton Machine for eight years as plant maintenance supervisor. . . . GERALD H. SCHUSTER, who joined the firm in 1948, has been named controller of River Raisin Paper Co., Monroe, Mich.

Crystal Tissue Co., Middletown, O., announces several departmental promotions: W. HOMER BOXWELL, formerly purchasing agent, becomes director of purchases. CHARLES W. FRAUNFELTER, from St. Louis district representative to asst. sales mgr., and HAROLD MORRISON, from purchasing dept. clerk to asst. purchasing agent.

LEO A. WILLOUGHBY has been appointed to a newly created position by A. E. Staley Mfg. Co., Decatur, Ill. He becomes coating supervisor in the field sales organization. Mr. Willoughby will continue as sales rep. in upper Michigan, Wisconsin and Minnesota but will aid other Staley representatives, customers

Rhodes ..... Moe ..... Cormier

First Papermaker to Earn Felt Technology "Degree"

. . . receives his diploma at ceremonies in Rensselaer, N. Y. ROMEO G. COMIER, supt. of Gardiner Paper Mills Inc., Gardiner, Maine, recently completed for the second time Huyck Co.'s workshop course in Applied Felt Technology. He is honored by EARL D. RHODES, vice pres. of Huyck Felt, and BILL MOE, vice pres. and gen. supt. of the Rensselaer, N. Y. firm.

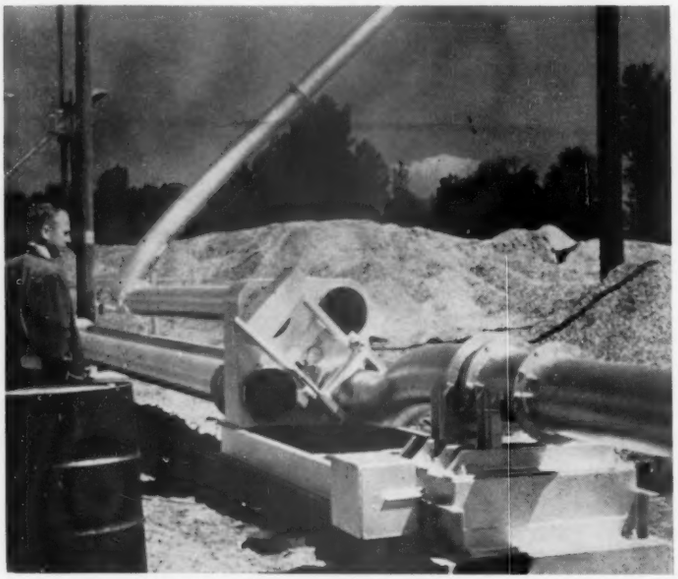
Barker ..... Herbert ..... Crannell

Community Responsibility Highlights Miami Valley Meeting

Pictured above are MARSHALL BARKER, consulting engineer, Beckett Paper; GEORGE HERBERT, president of Patton Mfg., and WAYNE CRANNELL, Patton gen. mgr.

They were among more than 160 members and guests who attended the recent meeting of the Miami Valley div. of the Superintendents Assn., at which CHARLES JONES, asst. sec. of Champion Paper & Fibre Co., stressed the importance of the executive's responsibility to his community.

The gathering, held at Hamilton, featured a mill tour of Beckett Paper Co. Included on the general program were WILLIAM ZIMMERMAN of Moraine Paper Co., divisional chairman, and JAMES SMITH of Albany Felt Co., national chairman of the Industrial Affiliates.



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Rader diversion valves make chip flow as flexible as water lines. These valves can be operated manually (see illustration) or automatically by remote control. Rader valves can be interlocked with bin level indicators or any other device to actuate control circuits, making delivery of chips to digesters or bins fast and sure with a minimum of labor. In one west coast paper mill, one Rader system, through the use of valves, delivers chips to six different destinations. The flexibility of Rader systems, piping underground or over obstacles, combined with automatic controls provides the most efficient method of conveying pulp chips, bark or any other type of wood particles.

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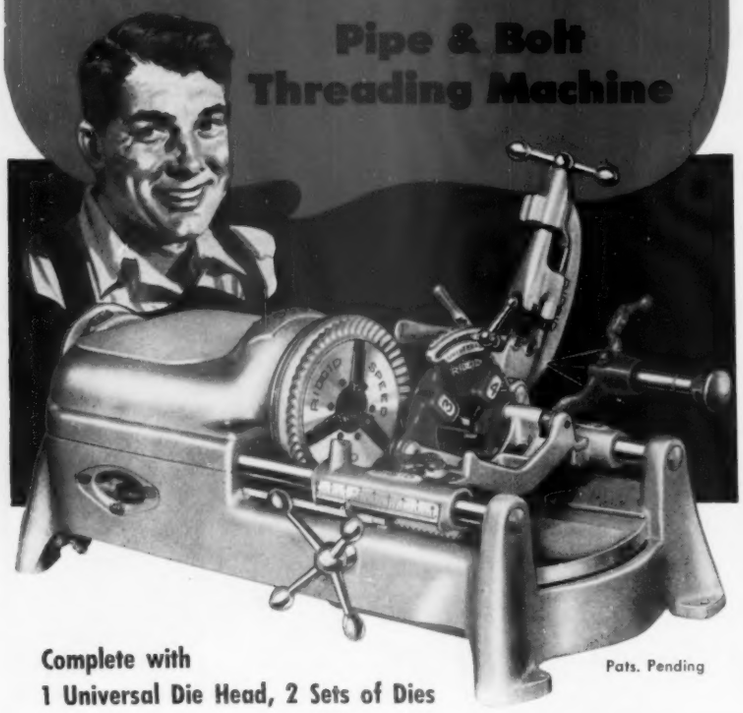

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Looks good, does better. Perfect cutting, reaming, threading fast . . . and easy! Three tools operate independently . . . swing up out of the way for short pipe chucking from front. Slip-proof Speed Chuck is a great performer. Concealed oil system, automatic shut-off nozzle. Quick-opening die head sets to size right in machine. Power? . . . RIDGID-built motor handles 2" pipe, conduit, bolt, rod —and 12" geared tools easily. Try it, compare it . . . and you'll understand its enormous popularity! Leg and wheel stands available. At your Supply House.

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THREADED PIPE . . . It's Tight . . . It's Best . . . Costs Less!

and the company's paper application research laboratory in technical service and consulting work.

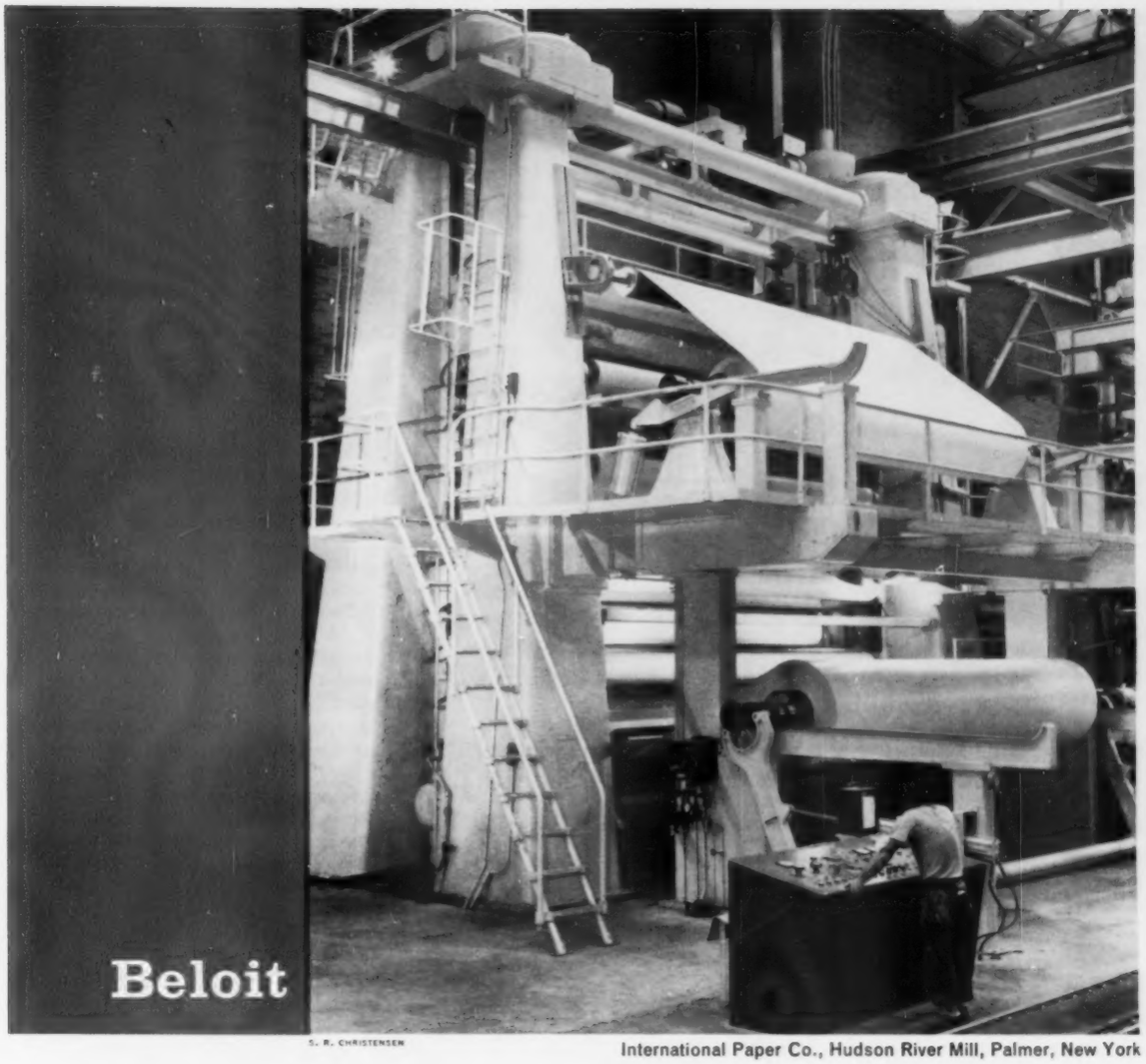
Two personnel appointments in the Research & Development dept. have been announced by Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. H. Robert Fretz joins the dept. as design engineer. He was previously employed in the same capacity by Scott Paper Co. At the same time, Cheng-Ming Hou joined the dept. as a chemist. He was chief chemist for Taiwan Pulp & Paper Co. in Formosa from 1946 to 1957. . . . Clifford R. Swett and Wilbur J. Noll have been elected vice presidents of National Wax Co., Skokie, Ill. Mr. Swett was formerly in charge of product development and research, while Mr. Noll headed production and traffic. It was also announced that John R. Lauterbach, for the past 17 years with Socony-Mobil Oil Co., has joined the staff as domestic sales mgr.

Charles Wykstra has been promoted to the position of controller for Allied Paper Corp. He held the position of mill controller at Kalamazoo, Mich.. supervising the over-all cost accounting functions of the mills. Mr. Wykstra replaces Garner Towne, who has resigned to accept employment with an eastern firm.

Reed Named Crystal Tissue Executive Vice President

Stanley H. Reed has been elected executive vice pres. and gen. mgr. of Crystal Tissue Co., Middletown, O. Formerly administrative vice pres., he has been with the firm since 1928, when he worked part time at the mill. He was assigned to the research dept. laboratories in 1936 and in 1938 was transferred to sales, becoming vice pres. for sales in 1949. In 1951 Mr. Reed assumed presidency of Crystal Waxing Co., a subsidiary, and was named to the board of directors. He became administrative vice pres. in 1957.

Willard J. Clancy has joined Shawano Paper Mills as asst. to the president in sales and administrative duties at the firm's Green Bay, Wis. office. He was formerly associated with Charmin Paper Products Co. at Green Bay and since 1953 has been asst. sales mgr. He joined Charmin's predecessor company (Hoberg Paper Mills) in 1927 as an accountant. . . . Prof. George Hill of Miami Univ. at Oxford O., was guest speaker recently at a meeting of the



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Rugged, dependable, compact . . . Beloit supercalenders are outstanding performers in the calendering of all grades of paper. Their practical design meets the most exacting demands for supercalendering in all widths and at speeds up to 2500 fpm. Features that contribute to Beloit performance are: resilient air-cushioned loading, quick roll change, renewable ways, fully adjustable gibs, complete unwind and rewind tension control, center or surface wind, special sheet threading arrangements, and positive high-speed lifts.

Why not discuss your supercalendering with a Beloit Sales Engineer? You will find his suggestions helpful. Beloit Iron Works, Beloit, Wisconsin.

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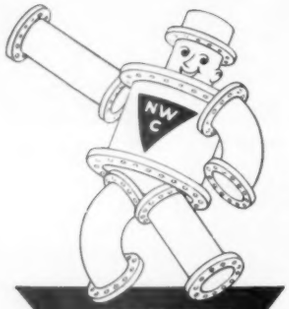
Strictly Personal

Miami Valley div. of the Superintendents Assn. Speaking on the subject, "Motivation," Professor Hill declared that a good supervisor accomplishes results by allowing the employe to reach the goals as if the accomplishments are the results of his own thinking.

A. E. PECKMAN is western district mgr. of both the Dexter and the Lawson Co. divs. of Miehle-Goss-Dexter Inc. He is headquartered at the Chicago office. In another Miehle-Goss-Dexter announcement, E. M. ABRAMS becomes sec.-treas. of the Lawson Co. div. He joined Lawson in 1947 as export mgr. He was named asst. sec. in 1956.

G. K. VIALL has been appointed senior vice pres. of Chain Belt Co. He joined the firm in 1921 as an engineer and subsequently became chief engineer of the Chain div., asst. to the pres., works mgr. and vice pres.—Don W. Zeigler.

CUSTOM FABRICATIONS



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In New Post for Patton

OLAF S. ANTONSEN has been named Fourdrinier and wet end project engineer by Patton Mfg. Co., Springfield, O. He was associated with Sandy Hill Iron & Brass Works for 15 years and prior to that had been with General Electric Co.

Black-Clawson Reports Executive Changes

DON H. MONTVILLE, vice pres. of the Black-Clawson Co., has been named director of sales for the Shartle div. at Middletown, O. New divisional sales mgr. is E. M. ROOT.

Becoming gen. mgr. of Black-Clawson (Canada) Ltd. is H. J. BUECHLER, succeeding Mr. Root.

In other B-C changes, WILLIAM T. SCHICK is new mgr. of sales administration for Shartle; BERNARD J. KOZIOL is transferred to Black-Clawson's southern district sales office; A. J. FELTON assumes domestic and foreign sales, and RALPH MCKASSON becomes asst. director of Shartle personnel.

Perry Assumes Ohio TAPPI Chairmanship

VIRGIL E. PERRY, chief engineer for Harding-Jones Paper Co., has been elected 1959-60 chairman of TAPPI's Ohio Section. His election was announced at a recent meeting in Middletown, O.

Featured speaker at the gathering was E. S. SKINNER of Beloit Iron Works, who discussed the Inverformer, the historical background of this method of sheet formation and its adaptability to multi-ply grades.

Other new section officers include: CHARLES S. SWEITZER, Diamond Gardner Corp. (vice chairman); ED SUCHECKI, National Starch Products Inc. (treas.); GEORGE MARTIN, Champion Paper & Fibre Co. (recording sec.); STANLEY W. TROSSET JR., Diamond Gardner Corp. (corresponding sec.), and BURTON BAILEY, the Mead Corp. (program chairman).

Cooper Succeeds Stocker on WMU Advisory Committee

BERT H. COOPER, vice pres. of Kalamazoo Paper Co., is new chairman of the advisory committee on paper technology at Western Michigan Univ., Kalamazoo. His election was announced during the recent Third Annual Pulp & Paper Con-

ference at the school.

Mr. Cooper succeeds DWIGHT L. STOCKER, president of KVP Co. Named as vice chairman was L. D. NICHOLSON, vice pres. and gen. mgr. of Hamilton Paper Co.'s Michigan div. Newly-elected committee members are: EARNEST L. LUDWIG, vice pres. and res. mgr. of Bermingham-Prosser Co., Kalamazoo, and WARD D. HARRISON, president of Allied Paper Corp. and 1959-60 president of TAPPI. Continuing as sec. is DR. A. H. NADELMAN, head of the WMU paper technology dept.

Leaving the committee at the completion of their terms are Mr. Stocker and DR. J. J. HARRISON, vice pres. of Michigan Carton Co.

Owen Returns from South America as Allied Vice Pres.

L. B. OWEN, a veteran of 27 years in the pulp and paper industry, has become vice pres. in charge of manufacturing for the Paper Mill div. of Allied Paper Corp., Kalamazoo, Mich.

For the past five years Mr. Owen, a production specialist for fine papers, has been active in the industry in South America. He served most recently as consultant and mgr. for the paper dept. of W. R. Grace & Co. in Lima, Peru, where he helped in the planning, construction and operation of a bagasse pulp and paper mill. He was previously vice pres. and gen. mgr. of a Uruguayan paper company and prior to that had been gen. supt. of P. H. Glatfelter Co., Spring Grove, Pa.

Consolidated Appointments

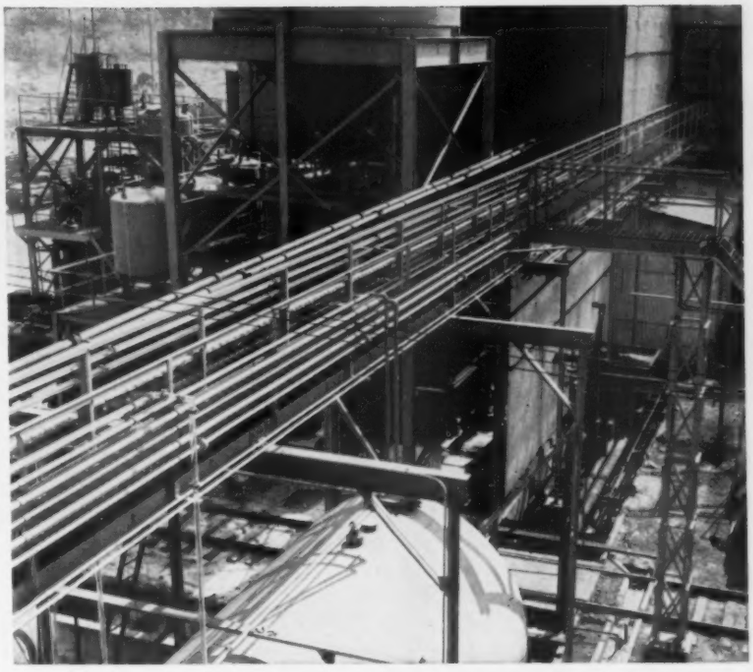
JACK CHINN has been named asst. paper machine supt. at the Wisconsin Rapids div. of Consolidated Water Power & Paper Co. A 1954 graduate of the Institute of Paper Chemistry, he was formerly asst. to the paper machine supt.

In other Consolidated appointments, ALVIN HAFERMAN, former night supt., becomes asst. to the industrial engineer; RICHARD STOUGHTON, formerly with Bailey Meter Co., is instrumentation engineer in the engineering dept.

Pacific

LAWSON P. TURCOTTE, president of Puget Sound Pulp & Timber Co., has been elected a director of American Mail Lines. . . . WINSTON SCOTT, resident mgr. of Rayonier Inc.'s Shelton (Wash.) div., has joined (on loan) the Business & Defense Services Administration of the United States Dept. of Commerce. He will serve as advisor to the director of the Forest Products div.

ELMER A. CHRISTOPHERSON, asst. technical control mgr. for pulping operations, has been promoted to pulp mill shift supt. at Scott Paper Co., Everett, Wash. . . . J. B. LEWTHWAITE, 82, died recently



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An investment in Chemfast protection now will pay you maintenance dividends for years to come. Check these Chemfast features . . . they'll save money for you!

- Contains Devran Epoxy Resin
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Truscon qualified representatives will provide prompt inspection, color guidance and consultation without obligation.

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Strictly Personal

Morgan ... Robertson ... Gov. Rosselini

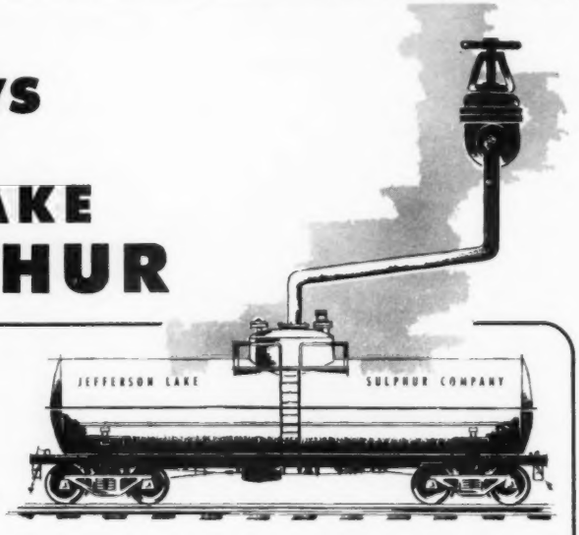
Robinson ... Gov. and Mrs. Hatfield ... Duffie

Pacific Northwest Paper Week (Paper Dress and all)

. . . recognizes the vitality of the pulp and paper industry in Washington and Oregon and the importance of paper products to the area's economy. At the left Gov. A. D. Rosselini of Washington signs the proclamation. Looking on are Howard W. Morgan, vice pres., Weyerhaeuser Timber Co., and Neil F. Robertson, gen. mgr., West Tacoma Newsprint Co.

With the state's first lady attired in an ensemble made altogether of paper, the Oregon celebration gets under way (right). Participating are Sam J. Robinson, vice pres., Publishers' Paper Co.; Gov. and Mrs. Mark O. Hatfield, and C. R. Duffie, gen. mgr., Western Kraft Corp. Sponsor of Paper Week is Northwest Pulp & Paper Assn.

Save 3 Ways
with
JEFFERSON LAKE
LIQUID SULPHUR



1. Lowers handling costs in your plant. Eliminates all dusting losses, too.
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3. New, lower rail freight rates make tank car deliveries competitive with water transportation.

You can rely on Jefferson Lake's many years of experience with tank car shipments for rapid delivery anywhere. Our fleet of specially designed and insulated tank cars, largest in the industry, stands ready to move your order. Send today for our illustrated brochure describing proper handling procedures for this new low-cost means of transportation.

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How much heat does your chipper generate?

Extensive research by Disston has shown that your chippers reach temperatures as high as 750° on the cutting edge. Disston has developed knives to withstand heat far in excess of 750° . . . resulting in continued high performance throughout their life.

Disston's Chip-Master is one example. It clears clean . . . cuts clean—without ragged edges. You enjoy a rapid flow of uniform chips, low production of costly sawdust, and long runs between sharpenings. Super-smooth grinding of the knife face means extra-clean, money-saving chipping.

See your distributor for more detailed information about the Chip-Master. Ask him about Disston's full line of top quality pulp and paper mill knives, or write to *Disston Division, H. K. Porter Company, Inc., 366 Tacony, Philadelphia 35, Pa. In Canada, Box 530, Acton, Ontario.*

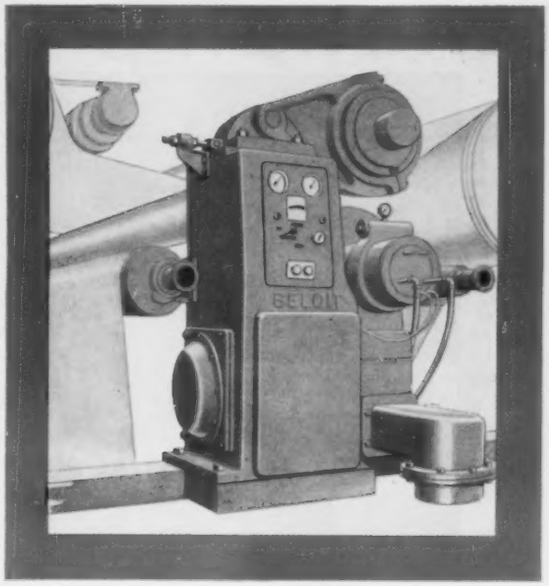
DISSTON PORTER DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

BELOIT UNIT MODERNIZATION

ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS



Beloit unit press frames

- Sheet moisture varying due to nonuniform nip pressures?
- Frequent adjustments to loading system required?
- Operating speeds restricted by low nip pressures?

Beloit Unit Press provides optimum press performance

A Beloit unit press can be installed on any machine. Its outstanding feature is frictionless *air diaphragm loading*—resulting in uniform loading at front and backside.

If higher operating speeds are restricted by an outmoded press, then this is the time to consider a Beloit unit press.

» **ACT!** *Write for facts—or let a Beloit Sales Engineer show you the advantages of a Beloit unit press. Write to Beloit Iron Works, Beloit, Wis.*

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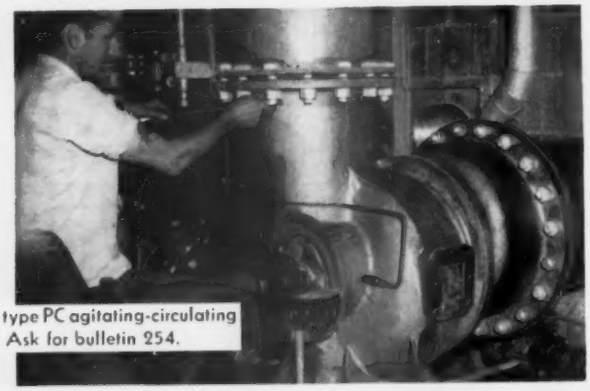
PAPER MACHINERY

your partner in papermaking

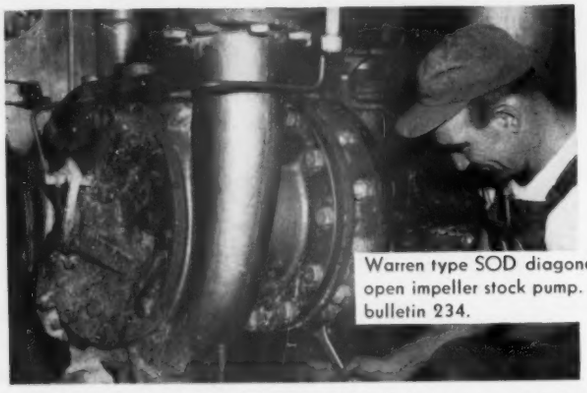
All through the New
RED BLUFF PLANT
OF DIAMOND GARDNER CORPORATION

WARREN PUMPS



Warren type PC agitating-circulating pump. Ask for bulletin 254.

HANDLE NEARLY ALL THE VITAL PUMPING SERVICES



Warren type SOD diagonally split, open impeller stock pump. Ask for bulletin 234.

THAT STRICT PRODUCTION SCHEDULES DEPEND ON

Warren type DB double suction pump. Ask for bulletins 225 and 251.

More than 120 WARREN PUMPS

are operating at the new Diamond Gardner plant at Red Bluff, California.

With the help of Warren engineers, the progressive planners of this modern integrated forest products plant selected nearly the entire range of Warren stock and water pumps. That's a sound indication of implicit trust in Warren's ability to design and produce the most efficient pumps for all types of plant services.

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PP-41

WARREN PUMPS, INC. WARREN, MASSACHUSETTS

Brown Becomes Sales Vice Pres., Ketchikan Pulp Co.

DR. ROBERT E. BROWN, vice pres. and technical consultant for Ketchikan Pulp Co., has been named vice pres. in charge of sales. Born in Dayton, O., U. S. A., and graduated from Miami Univ. of Oxford, Dr. Brown was awarded a master's degree from Princeton and a Ph. D. from Iowa State College. He served Rayonier Inc. and its predecessor companies more than 20 years (in research, as asst. mgr. of the Hoquiam, Wash. mill, and in technical sales). He became a consultant for the Ketchikan, Alaska firm in 1951.

at his home in West Linn, Ore. The family name has been associated with the pulp and paper industry in England and the United States for more than 200 years, including establishment of the first Pacific Coast paper mill. Mr. Lewthwaite personally devoted nearly a half-century to the industry, retiring in 1947 as senior accountant for Crown Zellerbach Corp., Portland. He had completed 49 years of service. . . . WALTER JACOBY, supervisor of product quality and development at Crown Zellerbach Corp. in Camas, Wash., has completed 25 years with the firm. . . . JOHN M. FULTON, director of purchases for Crown Zellerbach and president of the Portland Chamber of Commerce, attended the 47th annual meeting of the Chamber of Commerce of the United States in Washington, D. C., late in April.

C. R. DUFFIE, who joined Western Kraft Corp. in 1957 as mill mgr. at the Albany, Ore. plant and subsequently became resident mgr., has been named vice pres. of the firm. . . . SHIGEO MIZUNO, president of Kokusaku Pulp Industry Co. Ltd. of Tokyo, Japan, has been elected to the board of directors of Alaska Pulp Co. Ltd. . . . ROBERT BERGER, son of HAAK BERGER, pulp mill supt. for Simpson Paper Co., has won first place in the physics division of the Everett (Wash.) High School Science Fair with an automatic bowling computer that he designed and built as a home project. . . . The Western-Waxide Paper div. of Crown Zellerbach Corp. has promoted the following men at San Leandro, Cal: ERNEST ADAMS, carton supt. to carton production mgr.; FRANK DILLING to asst. mgr., frozen food packaging. . . . HAROLD QUIGLEY, paper mill supt. at the Crown Zellerbach Corp. mill at Antioch, Cal., rounds out 40 years of service with CZ.

VIC GRABAR, who joined St. Regis Paper Co. as a paper tester at the Tacoma (Wash.) mill 10 years ago, has been named asst. sales mgr. of the Kraft div., western district. . . . JIM RAMSEY, paper machine supt. for Simpson Paper Co. at Everett, Wash., has completed his 25th year with the company. . . . While vacationing recently in the Pacific Northwest, JOHN KAY, dept. mgr. for production analysis and service at Rhinelander (Wis.) Paper Co., attended the 30th anniversary meeting of Pacific TAPPI at Camas, Wash. . . . DR. JOSEPH L. MCCARTHY, professor of chemical engineering at the Univ. of Washington, has been made dean of the university's graduate school.—Louis H. Blackerby.

Vernon L. Tipka Represents Waterbury Felt Co.

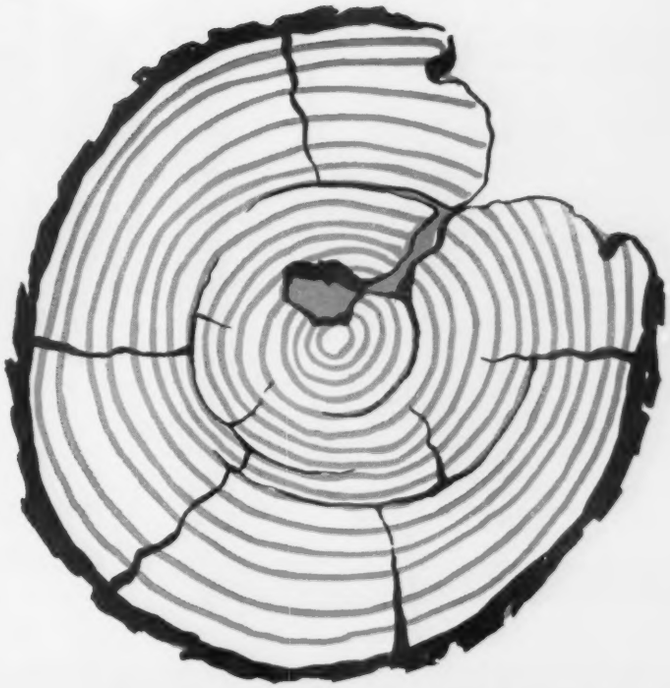
. . . on the West Coast, with headquarters at Oregon City, Ore. He has been associated with the paper industry more than 30 years in various executive and operational capacities. Mr. Tipka replaces WILLIAM A. KELLEY of Portland, who has retired after 25 years with Waterbury.

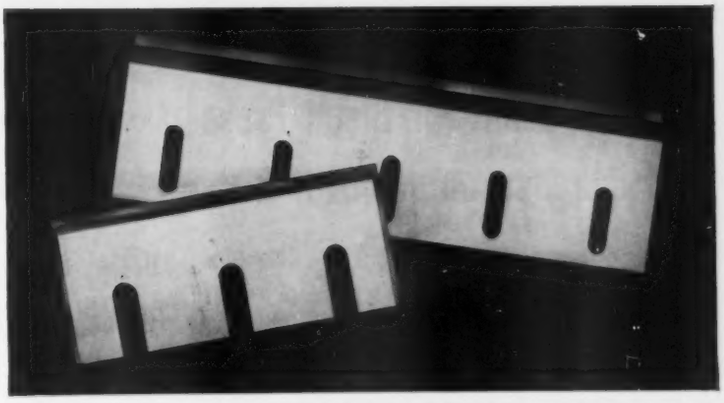
R. O. Hunt Named to Key Safety Group

R. O. HUNT, exec. vice pres. of Crown Zellerbach Corp. at San Francisco, has been named exec. director of the President's Conference on Occupational Safety. This national organization is designed to bring together a cross-section of the country's leaders to voluntarily reduce work injuries. Mr. Hunt served on the steering committee of the 1956 conference and in his present capacity heads the 1960 technical advisory committee.

Southern

Scott Paper Co. has shipped from its Mobile, Ala. mill a freight car containing the first of its nationally-known household products ever produced in the area. PAUL C. BALDWIN, vice-pres. in charge of manufacturing, engineering and research operations for the Chester, Pa. firm, had this to say: "To meet the tremendous growth and demand for Scott's household and industrial paper products in the South, Scott Paper Co. has now built its first tissue plant in this section of the country. We're proud of our new modern





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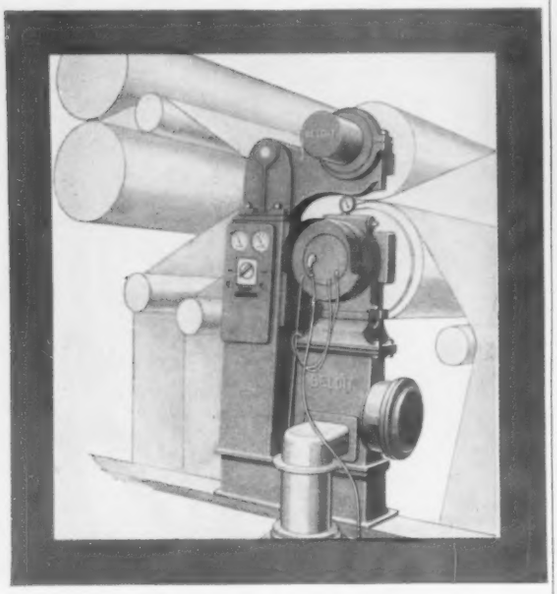
BELOIT UNIT MODERNIZATION

ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS



Beloit air bleed suction press

• Speed limited by drying capacity?

• Sheet rewetting a problem?

Beloit Air Bleed Press can increase output over 20%

Easily and economically installed at the second or third press position, the air bleed press (a Beloit "first") brings you the advantages of higher output . . . increased nip pressures . . . cleaner felts . . . and, most important, an end to sheet rewetting. Let Beloit design and building experience help you modernize that obsolete press section.

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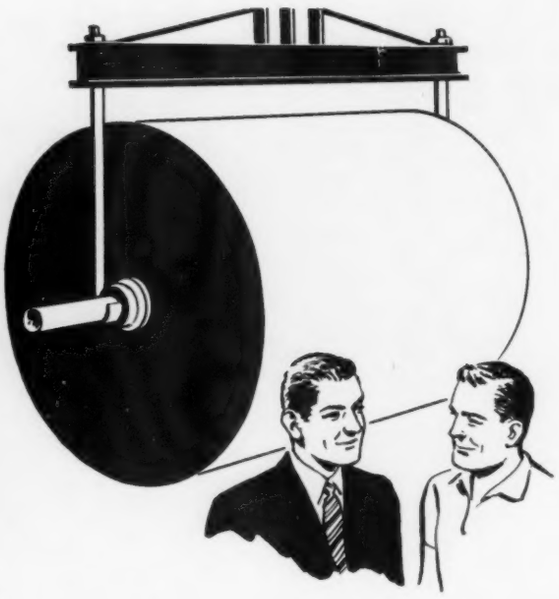
your partner in papermaking



How do you measure calender roll performance?

"...in tonnage of fine M. F. paper"

Butterworth Dura-Smooth Calender Rolls rate high with Mill Superintendents for the tonnage they handle, the finish they produce.

Just one Butterworth Refill in the stack with any other roll will show you why. Delays for turning down and refilling are reduced. Tonnage goes up. Finish is uniform, better too. Butterworth Rolls are made to exact specification, and pretested for hardness, smoothness and density before delivery.

You can get Butterworth Calender Rolls new or refilled for all makes of calenders. Write for quotation.

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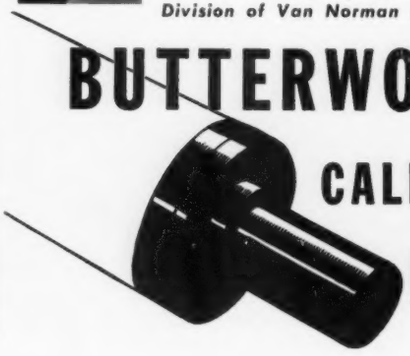
BUTTERWORTH



CALENDER ROLLS

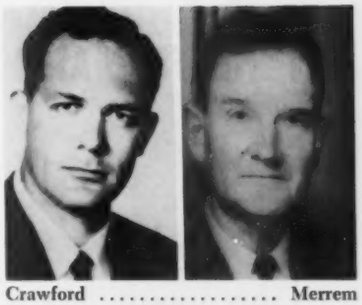
Strictly Personal

mill. We're proud of our Scott plant employes. And we're proud to be able to say Scott products are now being made here along with the fine Hollingsworth & Whitney specialty papers."

The Southern Exposure: SLICK LUSBY, a key figure in the erection and start-up of Champion Paper & Fibre Co.'s new No. 20 paper machine in Canton, N.C., has joined the staff of Continental Can Co. Inc. at New York, N.Y., where he is working under the direction of CHARLES MCCARTHY, vice pres. . . . D. E. WOODRUFF JR. has been elected vice pres. of Textile Paper Products Inc. of Cedartown, Ga. The firm, manufacturer of paper tubes, is expanding its facilities with plants in Illinois and at Jacksonville, Fla.

THEODORE A. COOK, first mgr. of West Virginia Pulp & Paper Co.'s mill at Charleston, S.C., died recently. A well-known figure in the industry, Mr. Cook began his career with West Virginia as a chemist at the Tyrone, Pa. mill in 1910. . . . Two new faces on the staff of Gulf States Paper Corp. at Demopolis, Ala.: JEFF SELLERS JR., a 1952 graduate of Auburn and formal naval officer, and JOHN EVANS, alumnus of the Univ. of Virginia and former electrical engineer for the Creole Petroleum Corp. in Venezuela, have joined the design engineering staff.

ROBERT FLICK, a graduate of Georgia Tech, has been named technical director of Brunswick Pulp & Paper Co., and GEORGE SEYMOUR is mgr. of process control and development. . . . Employes of Crossett Co. have been honored for the second time by the National Safety Council for their achievements in accident prevention. The men and women at the Crossett, Ark. plant received a plaque in recognition for scoring a 57% reduction in accident frequency during 1958 over the previous year. . . . CHARLES A. CAYCE has been named to the newly created post of southern regional mgr. of General Dyestuff Co., a sales division of General Aniline & Film Corp. . . . Newly elected director of the Chesapeake Corp. of Virginia are DR. CHARLES C. ABBOTT, dean of the Univ. of Virginia's graduate school of business administration and B. WARWICK DAVENPORT, Richmond, Va. attorney.



Crawford ..... Merrem

Promoted by East Texas

O. R. CRAWFORD has been elected a vice pres. of East Texas Pulp & Paper Co., Evadale, and becomes gen. mgr. of the firm's Southwestern Settlement & Development div. He joined the company in 1952 as a tax agent for Houston Oil Co., then a part owner of Eastex. In 1956 he was named asst. to the gen. mgr. of Southwestern Settlement.

At the same time it was announced that W. E. MERREM, present gen. mgr. of Southwestern Settlement, moves from Jasper to Evadale, where he reports directly to the president of Eastex on special organizational projects of a legal, fiscal and tax nature. He has been associated with the woods development of the area since 1924, when he went to work for Houston Oil. In 1941 he became vice pres. and gen. mgr. of Southwestern Settlement and when that firm was absorbed as a division of East Texas became a vice pres. and director of the pulp and paper firm.

McCLENAHAN MECHANICAL CONTRACTORS, Inc.

INDUSTRIAL PIPING CONTRACTORS
FOR PAPER MILLS – PULP – HARDBOARD
AND CONVERTING PLANTS

. . . . Our most recent project completed was the Diamond Gardner integrated forest products center at Red Bluff, California, in which we performed the complete plumbing, heating and industrial piping installations

MAIN OFFICE

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Branch Office: Red Bluff, California

Meet Huyck's
HINTERMAIER

John Hintermaier, Manager of the Physical Research Section of Huyck's Development Dept., brings to his job wide experience gained as a chemist and performance analyst for the textile and paper industries and Army Quartermaster Corps. A graduate of the Philadelphia Textile School, he serves papermakers by developing new weaves, felt constructions and techniques for using natural and synthetic fibers. Beyond this, John and his group painstakingly evaluate the physical characteristics of newly developed design principles to assure their success on paper machines.

HUYCK FELTS

First in Quality . . . First in Service Since 1870

Adams ..... Freuler

Promoted at West Virginia

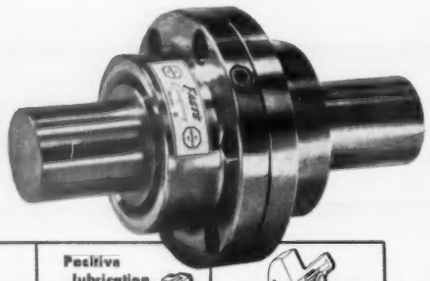
DR. DANIEL O. ADAMS has been promoted to supt., technical service dept., at West Virginia Pulp & Paper Co.'s Charleston, S. C. kraft div. He had formerly directed research for the firm at Covington, Va. Succeeding Dr. Adams at the Covington research center is FRED H. FREULER, formerly assoc. director. He joined West Virginia in 1954 in the engineering dept., went into research in 1956 and headed up the program that included the development of Clupak. Mr. Freuler is a mechanical engineering graduate of the Institute of Technology in Zurich, Switzerland, and holds a master's degree from the Univ. of Delaware.

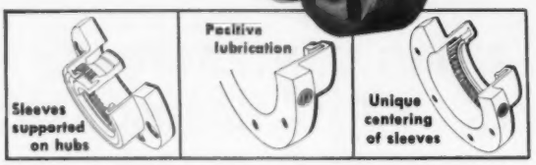
EDWARD H. ELLIOTT has been named industrial sales representative of Warren Pumps Inc. in the Baltimore area. His territory includes Maryland, northern Virginia and eastern West Virginia. He will continue to represent Warren in the Philadelphia area. . . . The Pigments div. of American Cyanamid Co. has established a new sales and warehouse facility at Charlotte, N.C. Named sales representative in charge is F. A. SAUTER, who will serve pigments customers in North Carolina, South Carolina, Virginia and eastern Tennessee. Since joining Cyanamid in 1955, he has been a pigment sales representative in the New York and Atlanta, Ga. areas. . . . E. F. Houghton & Co. is now serving southern industry through its warehouse and office located in Carrollton, Ga.

JERRY LEVAN, formerly southern mgr. for Bauer Bros. Co., announces the formation of a new sales and service organization, Gulf States Specialty Co. The company has been organized to serve the pulp and paper industry in the South and to assist in specific engineering problems relating to pulp mill operations, stock preparation, refining, paper machine calendering, rewinding, etc. Located in Mobile, Ala., Gulf States Specialty represents Appleton Machine Co., Noble & Wood Machine Co., Nichols Engineering & Research Corp., A. E. Broughton & Co. Inc. and Wapakoneta Machine Co.

WILLIAM H. DWYER JR. has been appointed mgr. of mid-continent and Gulf sales for Graver Tank & Mfg. Co., a div. Coast of Union Tank Co. He was previously mgr. of Gulf Coast sales for Graver Tank.—William F. Diehl Jr.

FAST'S Model B Coupling





reduces downtime and upkeep for light-to-medium drives!

Now you can profit from the durability and economy of famous Fast's couplings in a smaller and lower-cost version—available in 5 sizes for shafts ½" to 3⅛" in diameter.

The Model B coupling gives you the same features that have made Fast's the world's leading coupling for over 35 years. You get the same trouble-free performance, longer service life and lower maintenance costs. You also get prompt delivery because stocks are on hand to meet practically every need. Free engineering service is also available.

Write today for more details to KOPPERS COMPANY, INC., Fast's Coupling Dept., 5106 Scott Street, Baltimore 3, Maryland.

Engineered Products
Sold with *Service*

KOPPERS

THE ORIGINAL
FAST'S Couplings

Crown ..... Hopp ..... Buell

Wood Procurement Mgrs. Named by O-I Mill Division

New wood procurement managers have been named at three pulp and paper mills operated by the Mill div. of Owens-Illinois Glass Co.:

WALTER L. CROWN JR. at Valdosta, Ga.; ERITH L. HOPP at Jacksonville, Fla., and DAVID L. BUELL at Big Island, Va. Mr. Crown and Mr. Hopp will work with G. H. WESLEY, mgr. of Southern woodlands, while Mr. Buell will report to J. W. HALEY, recently named gen. mgr. of woodlands.

Mr. Crown joined O-I in 1952 and for the past five years has served as Valdosta asst. wood procurement mgr.; Mr. Hopp, formerly assigned to mills in Wisconsin and Michigan, has for the past year been located at the general offices in Toledo, O.; Mr. Buell joined the Mill div. a year ago at Big Island after 12 years' experience in forestry.

Supts. Nominating Committee

Membership of the nominating committee that will report at the 40th annual convention of the Superintendents Assn. has been announced by HOWARD E. WEHR of the Mead Corp. Mr. Wehr is national president of the group that will hold its meetings this year in Houston, Texas, June 2-4.

Chairman of the committee is MARTIN J. AUCHTER of Charmin Paper Products Co., Green Bay, Wis. Other members include: RAYMOND L. BARTON, Hamilton Paper Co. (Michigan div.); FRANK R. HAMILTON, Simpson Paper Co.; JOE G. KING, Champion Paper & Fibre Co., and W. R. ZIMMERMAN, Moraine Paper Co.

Dr. Ranby Appointed to Syracuse College of Forestry

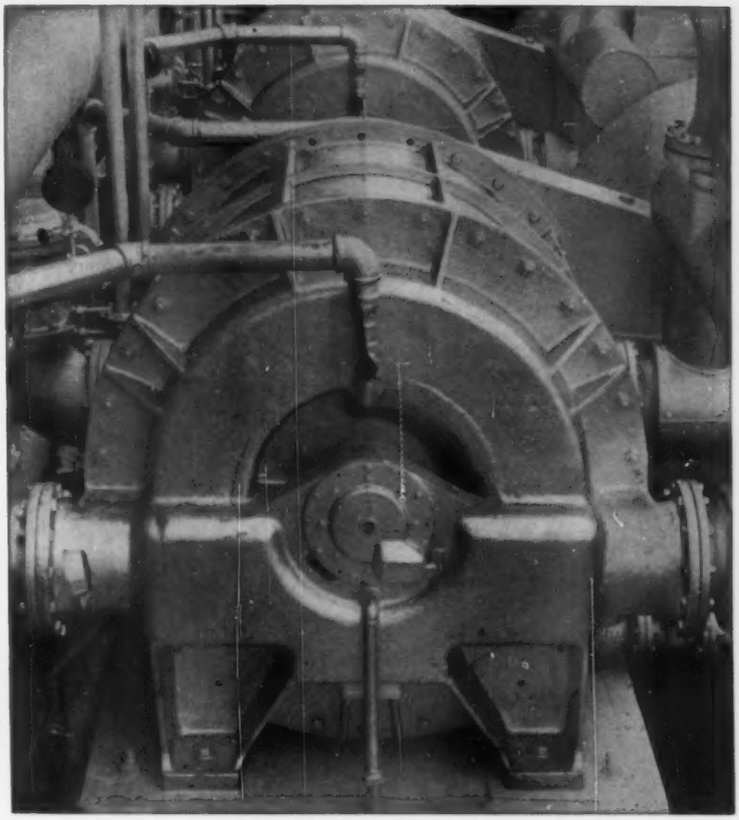
DR. BENGT G. RANBY has been named director of the Empire State Paper Research Institute (ESPRI) and professor of pulp and paper technology at the State Univ. College of Forestry, Syracuse, N. Y., U. S. A. He was formerly research specialist and group leader at the Marcus Hook, Pa. plant of American Viscose Corp.

Widely recognized as an authority in the fine structure of cellulose fiber, Dr. Rånby was born and educated in Sweden and is a phd. graduate of Uppsala Univ. While at Uppsala he was research asst. to PROF. THE SVEDBERG, a Nobel Prize winner, and later became asst. professor of physical chemistry. In 1952-53 he was duPont Research Fellow in polymer chemistry at the Brooklyn Polytechnic Institute.

Canada

Canadian International Paper Co. has announced two appointments in manufacturing operations: R. J. STEVENS becomes mgr. of the company's dissolving pulp mills, and T. B. L. YOUNG has been appointed mgr. of kraft mills. Mr. Stevens joined Canadian International in 1939 at the Temiskaming mill, was subsequently assigned to Industrial Cellulose Research Ltd., where he became asst. to the president and later mgr. of process development. In 1954 he moved to Montreal as gen. control supt. of CIP and three years later he became asst. to the mgr. of the pulp div. Mr. Young joined Canadian International as a control chemist in 1937, became control supt. at the Trois-Rivieres mill and later moved to Dalhousie, N.B.,

High machine speeds? High temperature headbox stock? You need NASH Vacuum Pumps!



Air from the suction rolls on paper machines carries with it substantial quantities of moisture. This considerably reduces the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump, because of the unique principle of operation, the bulk of this vapor is effectively condensed inside the pump. The total capacity of a Nash is therefore increased.

When you specify a Nash Pump it can be closely sized to the job. It is not necessary to select an over-sized unit, because the rated capacity of the Nash may be relied upon.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

441 WILSON ROAD, SO. NORWALK, CONN.

J. E. SIRRINE

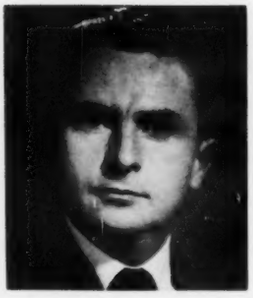
Engineers
Since 1902

Pulp & Paper Mills
Water Supply
Waste Disposal
Steam & Hydro Power Plants
Appraisals
Textile Mills & Finishing Plants
Surveys & Reports

GREENVILLE,
SOUTH CAROLINA

as control supt. He became asst. to the mgr. of news mills in 1949 and in 1958 was named asst. to the mgr. of the pulp div.

H. R. MACMILLAN, chairman of the finance committee of MacMillan & Bloedel Ltd., has returned to his office after cruising in Mexican waters in his power yacht *Marijean*. He was accompanied by RALPH M. SHAW, president of M&B, and other business associates. One of the objects of what has become an annual winter expedition is the collection of rare fish and other marine specimens. On this cruise—as on others—a member of the party was P. A. LARKIN, a fisheries authority of the Univ. of British Columbia. Also on the cruise was JOHN M. BUCHANAN, chairman of the board of B. C. Packers, another MacMillan enterprise. . . . CHARLES D. DICKEY JR., president of British Columbia Forest Products Ltd., and HAROLD A. SHAUB of the Campbell Soup Co. at Oakville, Ont., have joined the board of directors of Westminster Paper Co. Ltd., New Westminster, B.C. They succeed the late J. J. HERB, founder of the firm, and J. G. ROBSON, New Westminster lumberman who died recently. . . . D. F. AVERY, vice chairman of the board of directors of KVP Co. Ltd. at Espanola, Ont., has retired, but will continue to serve as a member of the board. Mr. Avery was elected president of the Canadian Forestry Assn. on March 31.



Hall New Celgar Engineer

KENNETH WILLIAM HALL has been named res. engineer for Celgar Ltd., now building a kraft pulp mill at Castlegar, B. C. Formerly with the Alberni Pulp & Paper div. of MacMillan & Bloedel Ltd., he will be primarily in charge of sawmill operations.

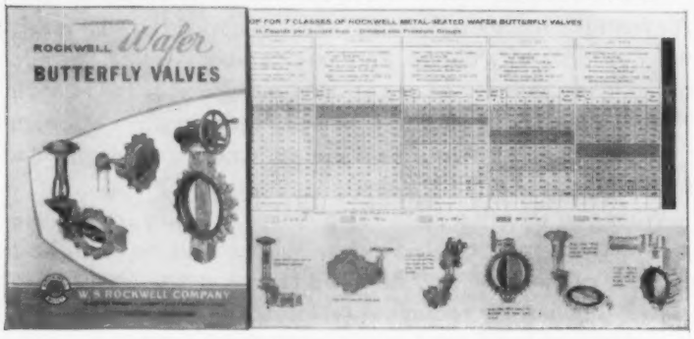
ROBERT A. MCDONALD has been named mgr. of the new Vancouver, B.C. offices of Howard Smith Paper Mills Ltd. and Canada Paper Co. He was formerly mgr. at the firms' Winnipeg, Man. office, where he has been succeeded by C. MURRAY DONOVAN. . . . WILLIAM MCMAHAN, vice pres. of Canadian Forest Products Ltd., planned to spend May in West Germany and other continental countries.

T. CECIL DAVIS, comptroller of St. Regis Paper Co. (Canada) Ltd., has been elected asst. treas. of the parent company. Mr. Davis, who has been with St. Regis in Canada since 1948, will make his headquarters at the New York, N. Y. offices.

JOHN E. LIERSCH, exec. vice pres. of Powell River Co. Ltd., has been elected a director of the company. He joined Powell River soon after World War II, during which he directed aircraft spruce production on the Queen Charlotte Islands. He served as chief forester until appointed vice pres. in charge of timber and forestry. At one time Mr. Liersch was head of the forestry faculty at the Univ. of British Columbia. . . . R. H. CHRISTIAN has retired as exec. vice pres. of Bathurst Power & Paper Co. Ltd. He continues his association with the firm as a vice pres. and director. . . . HAROLD S. FOLEY, board chairman of Powell River Co. Ltd., Vancouver, B. C., has been elected a member of the board of lay trustees at Notre Dame Univ., South Bend, Ind. He is the first Canadian to be so honored. Mr. Foley and his younger brother, M. F. FOLEY, president of Powell River, attended Notre Dame. . . . CLIFFORD W. SMITH has succeeded CHARLES W. STEPHENS as gen. mgr. of Dominion Paper Products Ltd., Toronto. He is immediate past president of the Canadian Paper Box Manufacturers Assn. At the same time, GRAHAM T. SCOTT was named comptroller for Dominion Paper Products.—Charles L. Shaw.

NOW! SELECTION MADE EASY

OF THE "WAFER" BUTTERFLY VALVE YOU NEED FOR REQUIRED RANGE OF PRESSURE DROP



This new Bulletin No. 583 gives all the facts to help you select just the size and construction of valve for your air, gas or liquid lines. Illustrations—charts—tables are arranged in a practical, easy-to-use manner. Write for your copy.

ROCKWELL SINCE 1888 BUILT

W. S. ROCKWELL COMPANY
Valves—Butterfly · Slide · Diaphragm · Special
2519 ELIOT STREET • FAIRFIELD, CONN.

LOCKPORT FIRST AGAIN
TENAX
Worsted
FELT
Now..the first ALL-WORSTED FELT joins the Felt Team That Performs!
Your Lockport Sales Representative is prepared to discuss its application.
LOCKPORT FELT COMPANY, Inc.
Serving the Papermakers Since 1891
NEWFANE, N. Y.
STARKVILLE, MISS.

B&W *reduces pulping costs with three chemical recovery systems...*

KRAFT, MAGNESIUM BI-SULFITE and NEUTRAL SULFITE

Developed for the alkaline, sulfite and neutral sulfite chemical pulping processes, B&W now offers three efficient, dependable heat and chemical recovery systems. Here's how each can help you cut pulping costs, boost profits....

B&W Kraft. Oldest and most widely used, this system features two recent engineering developments. The *Venturi Evaporator Scrubber* reduces capital costs by accomplishing fume collection and liquor evaporation in one operation . . . increases overall thermal efficiency by lowering exit gas temperatures to approximately 200 F. *Improved boiler design* permits steam pressures to 1500 lbs, steam temperatures to 900 F. . . . a combination which improves overall plant heat rate, generates more steam to satisfy the industry's increasing requirement for economical power.

B&W Magnesium Bi-Sulfite is the only commercially proven system that recovers *both* heat and chemical from recovered waste sulfite liquors. B&W MgO units generate up to 13,500 lbs of steam per ton of pulp . . . require low chemical makeup. Annual pulp production by mills using Magnesium Bi-Sulfite Recovery Systems is over 500,000 tons.

B&W Neutral Sulfite.* Proven commercially, this B&W system was specifically developed for the *complete* recovery of NSSC liquors. The newest B&W NSSC recovery unit will process neutral sulfite semi-chemical waste liquors produced by pulping 250 tons of hardwood daily. It is predicted that 97% of the sodium, 92% of the sulphur will be recovered from liquor delivered to the recovery unit.

Throughout the world, these dependable B&W recovery systems contribute to lower pulping costs. Whether you're planning a new mill or thinking in terms of conversion, B&W engineers can recommend the *right* recovery system for your particular application. For more information, write The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

*developed from the Mead Patents

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

P-818

PULP & PAPER

New Equipment Section

Mobile Log Barker
. . . No External Power Needed

Applications: For woodlands barking under normal North American conditions.

Advantages: Mobility is said to be an important feature of this new equipment, and it is ready to be driven "into a wood lot and be at work in minutes". Operators are protected by a safety line, which shuts off the feed and drum drive automatically when struck from either side. Low total operating cost is said to result from a low gasoline consumption rate coupled with maintenance economies made possible by rugged construction. Claimed to be the only completely self-contained mobile log barker in quantity production, the unit requires no external power sources.

Specifications: The barking component is mounted on an FC 170 Willys Jeep chassis with four-wheel drive, heavy-duty springs and shocks. Brake horsepower available for over-the-road transport is 105; the barking mechanism is driven from the same engine utilizing 35 hp. Production is claimed to be 5 to 8 cords per hour (depending on conditions). The machine is effective with logs 4 to 16 in. in diam. and 4 to 6 ft. long. (Longer lengths can be handled by auxiliary in-feed roller supports.) The barking component features replaceable tool tips and adjustable tool arm pressures. Feed speeds are adjustable from 50 to 110 fpm, with seven speeds forward and immediate reverse at any speed.

Supplier: **Canadian Ingersoll-Rand Co. Ltd., 800 Birks Bldg., Montreal, P. Q., Canada.**

Worm Gear Speed Reducers
. . . Unusual Flexibility

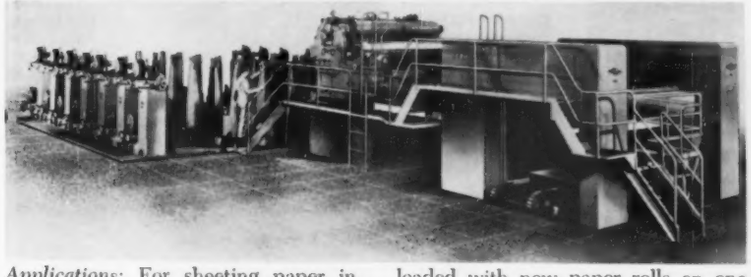
Applications: For use where flexibility in mounting and drive arrangements is important.

Advantages: According to the manufacturer, these units offer (1) higher efficiency; (2) higher capacity; (3) improved drive and mounting flexibility; (4) availability from stock of all ratios, and (5) torque control.

Specifications: Ratios range from 5-1/6:1 to 1212:1 with center distances of from 3 to 21 in. and any horizontal or vertical drive arrangement.

Supplier: **Philadephia Gear Corp., 3620 G St., Philadephia 34, Pa., Tel: GArfield 6-9400.**

Sheet Cutter-Layboy
. . . for paper, board, film, foil



Applications: For sheeting paper in paper mills, cutting paperboard, paper film and foil in converting plants.

Advantages: Features one-man operation with all controls for both cutter and layboy assembled on a single panel at the layboy. Designed for accuracy at cutting speeds of up to 1000 fpm, the unit has been designed to eliminate many trimming operations. The machine features a multiple-roll backstand and shuttle-carriage that can be shuttled from side to side. While half the backstands are being loaded with new paper rolls on one side, the rolls on the other side are unwinding through the cutter. Another minimum-downtime feature is the automatic layboy discharge, which discharges a 72-in. stack (including skid) automatically on the receiving conveyor for lift truck pick-up.

Specifications: Custom engineered to specifications and requirements of the individual plant.

Supplier: **Lamb-Grays Harbor Co. Inc., P. O. Box 359, Hoquiam, Wash., Tel: HOquiam 1000.**

Electronic Automatic Spacer
. . . for Guillotine Trimmers

Applications: For installation on any trimmer that has a screw-operated back gauge.

Advantages: The unit provides up to 20 settings in 1/64th increments from 2 in. to 100 in. or more. It is claimed that any setting can be changed in approximately 1 min. There are no cables, tabs or moving parts. Settings in sequence can range alternately either up or down. All trimming can now be done by turning lifts 90° each time.

Supplier: **Smith & Winchester Mfg. Co., South Windham, Conn., Tel: HArrison 3-5043.**

Continuous Refiner
. . . Boasts Oil Mist Lubrication

Applications: The newly designed Emerson Claflin 303 (superseding No. 3) is a continuous refiner for pulp mill defibering and paper-mill refining.

Advantages: The unit is said to incorporate many design innovations that permit ease of maintenance, new operating economy and efficiency. It is the first conical refiner having oil mist lubrication and is equipped with two mist atmosphere lubrication devices located in the bearing pedestals. The Claflin 303 will withstand 100 psi. The discharge pipe is cast as an integral part of the shell to eliminate the necessity of dismantling piping when removing the large head for filling changes. Control of the plug position is achieved through an accurate microfeed mechanism that permits "positive settings and extremely fine adjustments".

Specifications: The Clafln 303 is designed to use segmental fillings, which provide a wide choice of materials and knife patterns. Fillings changes are made without disturbing the bearings or packing box assemblies.

Supplier: **Emerson Mfg. Co. (div. of John W. Bolton & Sons Inc.), Lawrence, Mass., Tel: MUrdock 6-6171.**

AUTOMATION

a practical reality with AMERICAN PANTOGRAPH LIFT TABLES

AUTOMATION and American Pantograph Lift Tables go together to feed, lift and accumulate a variety of material because controls of any type can be used with the simple electric hydraulic system.

AUTOMATE individual machine operations, incorporate in conveying systems, or use at any location where mechanical lifting or lowering of material will reduce worker fatigue and increase production.

Model	Capacity	Vertical Travel	Collapsed Height Min.	Platform Size Min.
M-1170-1A	1,000#	31"	5"	18"x42"
M-1170-1B	2,000#	31"	6"	18"x42"
M-1170-1C	1,000#	48"	6"	18"x60"
M-1170-2A	4,000#	36"	7"	18"x48"
M-1170-2B	4,000#	36"	7"	24"x48"
M-1170-2C	3,000#	48"	7"	24"x60"
M-1170-2D	2,000#	60"	7"	24"x72"
M-1170-2E	6,000#	36"	8"	24"x48"

For detailed information on American Pantograph Lift Tables and how they can solve your lifting problems, write for bulletin AMC-5000.

Factory field engineers and representatives throughout the USA and Canada.

American MANUFACTURING COMPANY INC.
Phone, wire or write
Tacoma 2, Washington

Greater Production of Higher Quality Pulp

- *in Less Time*
- *at Lower Cost*

This is the end result of the various processes and equipment which we have installed in pulp mills throughout North America. Send us details of your requirements.

Chemipulp Process Inc.
Watertown, N. Y.

Associated with

Chemipulp Process Ltd., 253 Ontario St., Kingston, Ont.

•

Pacific Coast Representative
A. H. Lundberg, Inc., P. O. Box 186, Mercer Island, Wash.

HANCHETT KNIFE GRINDERS

MODEL DN LOW PRICED

GUARANTEED PERFORMANCE

Capacity: 32" to 108"
Wheels: 10" to 14" Dia.
Table Drive — Timing Belt with Elec. Reversing Motor
Motor — 3 H.P.

Delivers the finest in knife Edges and high production at low cost

DEALER INQUIRIES INVITED

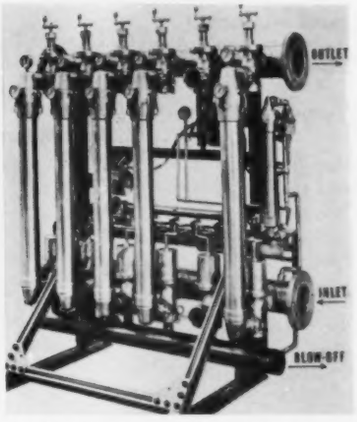
MODEL GK HEAVY DUTY

Capacity: 32" to 196"
Wheels: 14"—16"—20" Dia.
Motors: 3 to 15 Horsepower
Table Drives: Mechanical—Electric—Hydraulic
Precision Built—accurate—rugged and quiet

HANCHETT MANUFACTURING CO.
Main Office: BIG RAPIDS, MICHIGAN
West Coast: PORTLAND 1, OREGON

Backwashing Water Filter

. . . for Automatic Operation



Applications: For filtering process water.

Advantages: Automatic operation is achieved. As the filter media becomes partially clogged by impurities, the outgoing line pressure of filtered water will drop relative to incoming pressure, and this differential in pressure will initiate and control an entire backwashing cycle. The unit provides a plurality of individual filters on inlet, outlet and blowoff headers. Any filter may be removed from the line without shutting down the operation of the main unit. The filter also provides positive non-short circulating filtration so that no dirty or unfiltered water can "sneak" around the ends. Filter elements are electric-welded and continuously formed so that they may be "soured out" with a 10% inhibited muriatic acid, 90% water solution. The filter element will not collapse even with 150-psi differential pressures. Manual operation is possible in the event of power failure.

Specifications: Bronze and copper construction with either monel metal or 316 stainless filter elements; 20 through 700 mesh; pressure to 200 psi; temperature to 200° F.; capacities to 1,000 gpm.

Supplier: **Ronningen-Petter Co., 2700 South 27th St., Vicksburg, Mich., MIdway 9-5911.**

Penetration Tester

. . . Eliminates Human Error

Applications: To determine the sizing of a paper sample by the objective photoelectric measurement of light reflectance from the sample during penetration by a test liquid.

Advantages: The Fotosize unit, based on a Hercules Powder Co. design, "takes the measurement of sizing out of the area of human error that is present in subjective visual measurements, even by trained operators."

Supplier: **Thwing-Albert Instrument Co., Penn St. at Pulaski Ave., Philadelphia 44, GErmantown 8-5719.**

"Tailor-Made" AC Motors

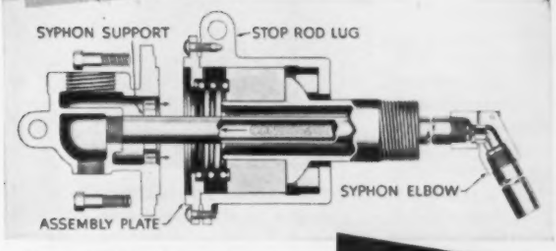
. . . Many Features Available

Applications: "To meet the exacting requirements" of pulp and paper and other similar process industries.

Advantages: Various combinations of motor features can now be made available to meet the needs of a specific plant. The new "square look" of the Custom 8000 general line (with ratings of from 100 to 600 hp) offers better enclosure and considerable savings in floor space. Easier accessibility

The right rotary joint for every need!

. . . ON PAPER MACHINE DRYERS
. . . CORRUGATORS
. . . CALENDERS
. . . ROOFING MACHINES
. . . WAXERS
. . . EMBOSSERS
. . . PRINTING PRESSES

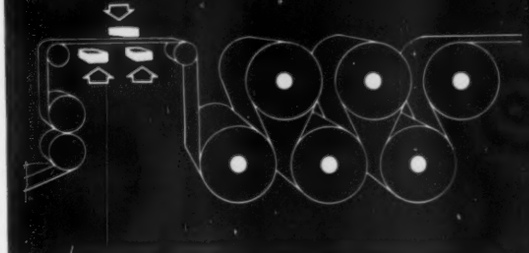


Type "SBP" shown is completely self-supporting. Like all Johnson Joints it has no packing, needs no lubrication or adjustment. The syphon elbow replaces unwieldy curved condensate drainage pipes with two straight pipes, hinges to pass right through the joint. Write for Bulletin S-3002. Johnson Rotary Pressure Joints are available for all operating speeds, pressures, mountings.

Johnson ROTARY PRESSURE Joints
First in the Paper Industry

THE JOHNSON CORPORATION
849 Wood St., Three Rivers, Mich.

Increase Dryer Capacity
WITH RED-RAY RADIANT GAS BURNERS



RED-RAY Burners applied between press and dryers remove surface water, pre-heat the web and increase dryer capacity.

Write for more information to:

RED-RAY MFG. CO., INC.
318 Cliff Lane, Cliffside Park, N. J.
Tel: WHitney 3-1000

"THIS LUBRICANT DOUBLES THE LIFE OF GEARS"

—says TRINITY ALPS LUMBER CO.
Hayfork, California

"Our trucks have a forty mile county road logging haul over adverse grades, each truck making two complete round trips each working day. Our shop foreman in charge of maintenance, reports that with the use of LUBRIPLATE Lubricants there has been a minimum of truck down time and replacements of bearings and gears. The double reduction gears with LUBRIPLATE APG-140 has shown a saving of fifty per cent over previous operations."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

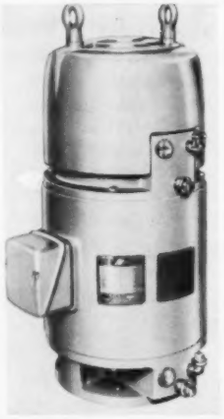
PULP & PAPER — Equipment & Supplies

for maintenance is a "built-in" feature. Lower noise levels and greater overall ruggedness were also listed as advantages.

Specifications: Several insulation systems are available. Among these are Polyex for normal Class A duty and the new Polyseal Class B system of supported silicone rubber insulation. The new motor has withstood shock loads of up to 20 Gs.

Supplier: **General Electric Co. (Medium AC Motor & Generator dept.), 1 River Rd., Schenectady 5, N. Y., Tel: 4-2211.**

Vertical All-Weather Motors
. . . Resist Chemical Contaminants



Applications: For indoor and unprotected outdoor service on shallow or deep-well turbine pump applications.

Advantages: Design offers "greater compactness for space saving and handling ease and incorporates recent advances in insulating materials. These materials provide optimum resistance to moisture and chemical contaminants and have high mechanical strength." Construction makes possible in-the-field assembly. Coupling and thrust bearing can be removed in 5 min. The vertical hollow shaft unit has an oil-metering system, sealed bearing chambers and Alnico magnet drain plugs that collect foreign ferrous particles in the oil. A minimum of cooling air is required.

Specifications: The motors are available in ratings of 1 to 30 hp. Ninety-degree turns in the air flow system prevent the entrance of snow and rain, and non-corrosive screens keep out foreign matter and rodents. Optional features include: non-reverse ratchet, part winding or increment start connections, bearing and winding temperature detectors or thermoguards, space heaters and snow covers. (Other models are available in ratings up to 2,000 hp. in enclosed or explosion-proof enclosures.)

Supplier: **Louis Allis Co., Dept. P., Milwaukee 1, Wis., HUmboldt 1-6000.**

Two-Drum Upright Reel
. . . Driven by a.c. Motor

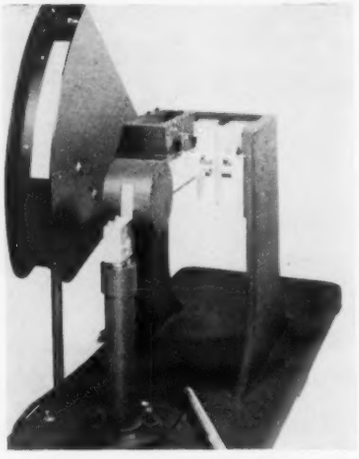
Applications: For continuous winding and unwinding operations.

Advantages: The reel is driven by an a. c. motor instead of the usual paper machine line shaft and thus eliminates the necessity of line shaft extension. The reel is also adaptable to direct drive from adjacent shafts—such as from the machine calender or from a counter shaft located either overhead or in the machine basement.

Specifications: The unit is equipped with a water-cooled brake with a flanged mounting arrangement. Both the brake and the air-cooled slip clutch are of Fawick design and manufacture. Reel mandrils are removable and permit turning the paper roll end for end so that it can be unwound in a reverse direction.

Supplier: **Patton Mfg. Co., 1802 W. Pleasant St., Springfield, O., Tel: FAirfax 3-5595.**

Torsion Tear Tester
. . . Heavy-Duty Unit



Applications: To measure the tearing strength of strongly directional materials that tend to tear at an angle from the application of force.

Advantages: The tester holds the specimen rigidly throughout its entire length on both sides, and the tearing force is directed to produce a tear down the center line of the specimen. (The unit is said to be ideal for measuring the tear strength of cylinder board, corrugated board, etc.)

Supplier: **Thwing-Albert Instrument Co., Penn St. at Pulaski Ave., Philadephia 44, Pa., Tel: GErmantown 8-5719.**

Why "Umpteen" different suppliers?

Allis-Chalmers Can Save You Time and Money with **Coordinated Engineering and Teamed Equipment**

Allis-Chalmers offers you all of these advantages:

- A broad line of mechanical *and* electrical equipment.
- Coordinated engineering — geared to match diversified Allis-Chalmers products to your specific needs.
- Application help for you or your consultants.
- Undivided responsibility for performance.
- Continuing field service.

And, of course, having only one supplier eliminates the many conference hours, the complications of delivery and installation scheduling, the phone calls, telegrams and voluminous correspondence associated with buying from a combination of suppliers.

Get the complete story *from your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.*

Allis-Chalmers Products for the Pulp and Paper Industry

Centrifugal pumps, rotary compressors, motors, control, Texrope drive equipment, screens, slakers, kilns, turbine-generators, condensers, switchgear, water conditioning equipment, materials handling equipment.

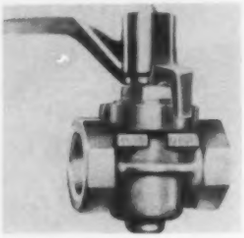
A-C ALLIS-CHALMERS

A-5976-PP

Texrope is an Allis-Chalmers trademark.

Vacuum Valve

. . . Based on Radical Design



Applications: For high-vacuum services.

Advantages: The plug, eccentric—or cam-shaped in cross section,—matches an eccentrically-raised body seat. Corried on journals at either end ,the plug rotates only a quarter-turn from full open to dead shut. The plug face and seat are in contact only when the valve is closed; in opening the valve, the slightest rotation of the plug breaks the contact, and the valve action is said to be free, easy and frictionless. Straight-through flow and a large port area assure low impedance.

Specifications: Leak rate across the seat on a 3-in. valve is certified at less than 0.003 micron cu. ft. per hour. Certified stem leak rate on valves 3 in. and smaller is 0.01 micron cu. ft. per hour. DeZurik vacuum valves are available in semi-steel, stainless, ni-resist, bronze, acid-resisting bronze, steel, aluminum, Alloy 20, monel, pure nickel, Hastelloy B, Hastelloy C and other alloys; they are available in sizes ranging from ½ in. to 20 in. and can be supplied for either manual operation or with on-off or positioning type actuators for automatic or remote control.

Supplier: **DeZurik Corp., Sartell, Minn., Tel: BLackburn 1-0221 (St. Cloud).**

High-Velocity Dryer

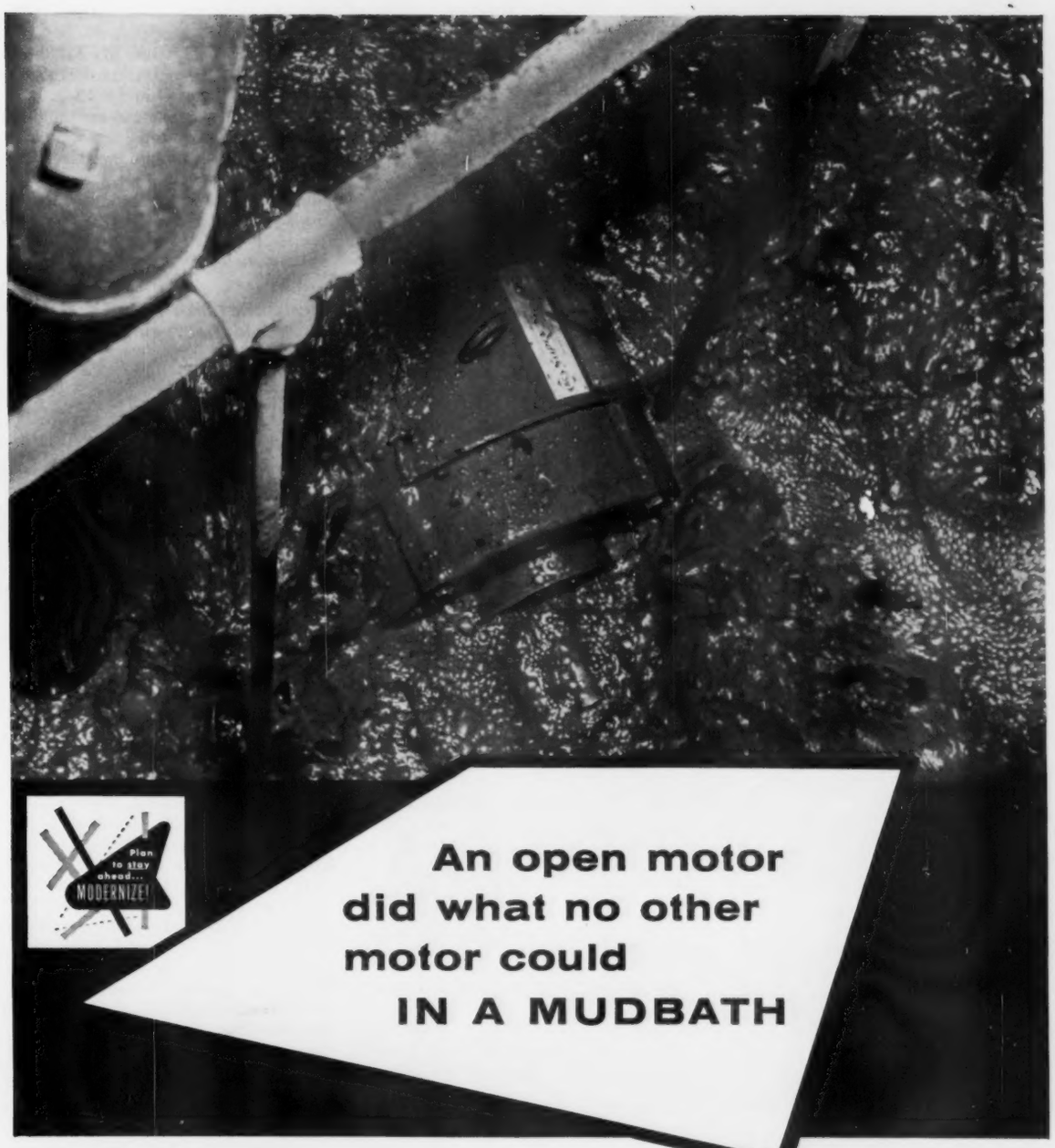
. . . Increases Productivity

Applications: For drying pulp, paper and paperboard and the coatings applied to these materials.

Advantages: According to the supplier, the SP high-velocity air dryer dries the web at least three times faster and dries it uniformly without overdrying it. This "improves product quality and reduces reject rates, while also contributing to increased output by eliminating the necessity for slow-speed overdrying."

Specifications: The unit comprises multiple drying heads that direct independently regulated air streams against the web as it rounds the paper dryer. It is claimed that one SP dryer will provide as much drying capacity as several conventional dryers. Supply air from each independent drying head is regulated according to the particular moisture conditions of the section of web opposite it. The drying heads are curved ducts installed side by side beneath the dryer roll. The over-all width depends upon the width of the machine, and the width of the individual heads upon given drying requirements. Heads are partitioned by curved dividers into two compartments, one for supply air and the other for return air. Maximum circulation is said to be maintained and heating requirements kept to a minimum.

Supplier: **J. O. Ross Engineering Div., Midland-Ross Corp., 444 Madison Ave., New York 22, N. Y., U. S. A., PLaza 9-3353; and Carrier-Ross Engineering Co. Ltd., 22 Cavendish Square London, W. 1.**



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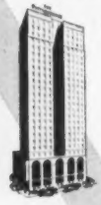

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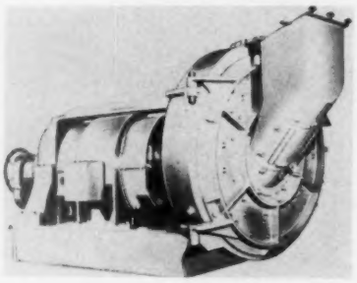
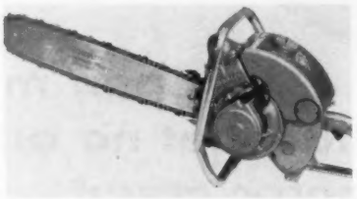


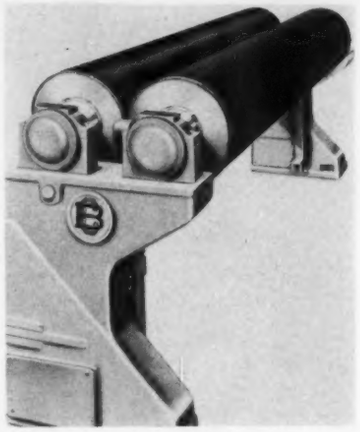
Applications: For reducing chip size prior to digesting.
Advantages: Laboratory and field tests indicate that chip fractionation may result in over-all yield increase, reduction of active alkali, reduction of screen rejects, shortening of digester time, elimination of the pre-knotter operation and improvement of strength characteristics.
Specifications: The units are available with a variety of plate designs and disc diameters; choice is dependent on production requirements.
Supplier: **Sprout, Waldron & Co. Inc., 130 Logan St., Muncy, Pa., Tel: 6-3111.**

Gear Drive Chain Saw
. . . More Lugging Power

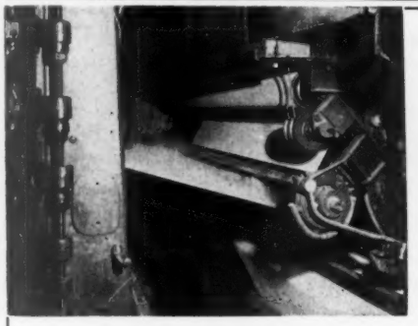


Applications: For pulpwood operations.
Advantages: According to the manufacturer, the Homelite Wiz has "more lugging power than direct drive models." It is said that the saw will cut an 18-in. tree in 16 sec. and has power adequate for felling 5-ft. trees.
Specifications: Weighing 20 lb., the saw is available with 14- to 28-in. blades (either Homelite Hard Track or Extra Hard Tipped) and a 16-in. bow guide. It has a short-stroke engine, drop-forged counterbalanced crankshaft, automatic clutch, moisture- and dust-proof magneto, a larger air filter and all-position diaphragm carburetor.
Supplier: **Homelite (a div. of Textron Inc.), Port Chester, N. Y., Tel: WEstmore 9-3400.**

Horizontal Size Press
. . . Balanced Pneumatic Loading



Applications: For application of sizings to high-grade papers.
Advantages: Featuring standardized basic unit design, this horizontal size press has balanced pneumatic roll loading. Rolls are carried in heavy-duty anti-friction bearings. On the larger units the pivot roll arms are equipped with short-stroke pneumatic cylinders and with frictionless diaphragm units on the smaller presses. When air pressure is released, rolls separate automatically.
Specifications: The unit is available in roll size ranging from 16- to 36-in. diam. matched rolls. Accessory equipment can be added as desired.
Supplier: **Black-Clawson Co., Paper Machine div., Watertown, N. Y.**



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LITERATURE

Zein in Industry

Available from Corn Products Sales is a detailed bulletin, "Zein—a Versatile Protein for Industry", which describes the characteristics and uses of Argo brand G200. The publication describes several applications previously barred to most proteins and gives characteristics of zein formulations based on organic solvents, as well as water dispersions of the protein. The uses of zein in specific applications are discussed and typical formulations given. A glossary of proprietary products is included. Copies may be obtained from Corn Products Sales Co., 17 Battery Place, New York 4, N. Y.

Gearmotors

Bulletin No. 3050 describes the Louis Allis line of right angle gearmotors. Engineering information is given on gearmotor ratings of 1/3 to 30 hp., single reduction, with output speeds of 23 to 280 rpm. In these units motors and worm gear reducer are combined integrally to eliminate alignment and maintenance problems. Included are a cutaway view, mounting versatility and the flange mounting arrangements available. Contact Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis.

Truck Rebuilding

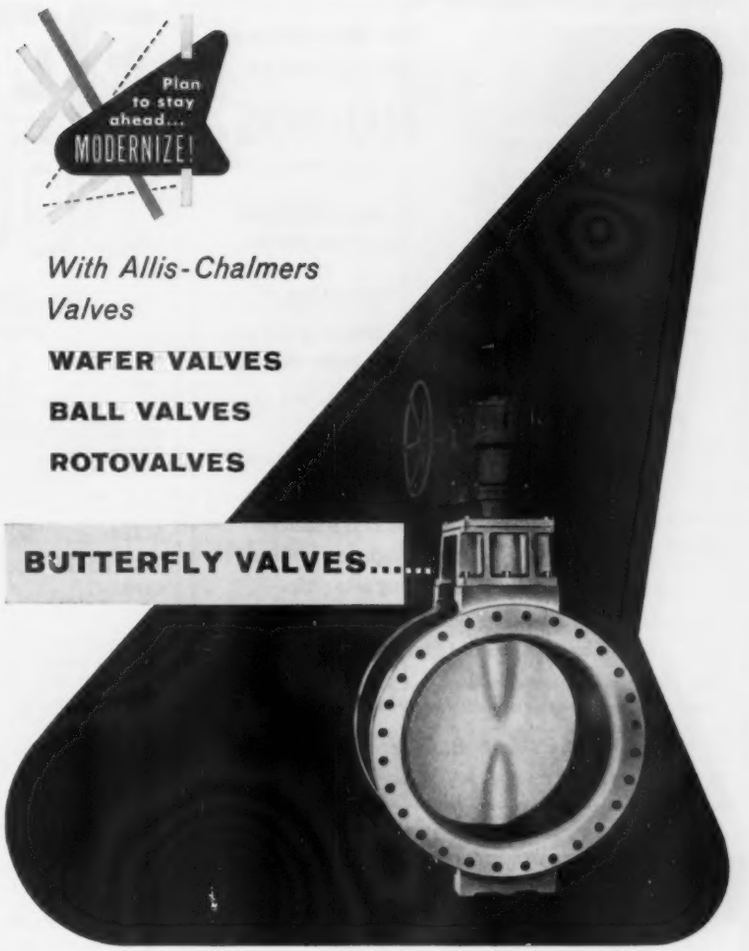
Factors determining whether to rebuild existing industrial trucks or to purchase new models are presented in a four-page folder recently published by Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, O. Covered are such topics as the economies of truck rebuilding, the truck sections normally rebuilt, etc. Nearly a dozen photographs are included.

Mechanical Filtration

The Waco filter is described in Bulletin A4-1 published recently by Improved Machinery Inc., Nashua, N. H. Operations on fresh water, waste recovery and black liquor are described. Among the data included in the eight-page brochure are: applications, operation, capacities, engineering specifications, operating features and advantages.

Worm Gear Speed Reducers

Complete data on a new type reducer are given in "Universal Worm Gear Speed Reducers" (Folder 2724) recently made available by Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill. Designed to operate in three positions, the unit has a higher capacity and external fins for cooling. Included in the brochure: tables for service factors, load classes, input horsepower ratings, overhung load ratings and thrust load ratings; dimensions, and weights.



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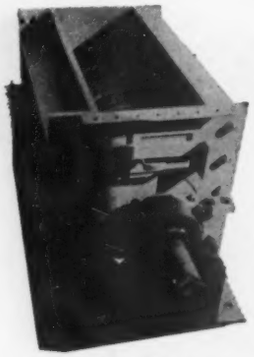

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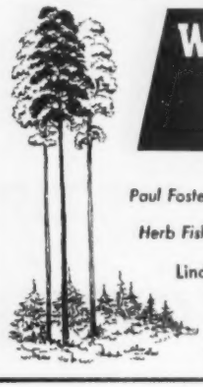

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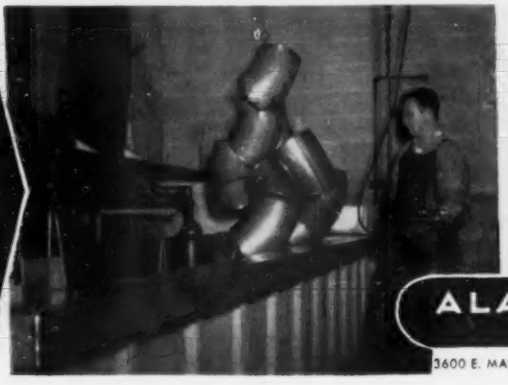

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The Last Word PULP & PAPER Editors' Page

Breakthrough on New Pulp Source

It has been traditional in assessing world pulp resources to cite the tremendous forest wealths of North America, Scandinavia and the Soviet Union. These fiber-rich regions, it has been said, are the future backbone of the world's fiber needs.

But now a new breakthrough in the pulping of sugar cane, commonly called bagasse, may change this fiber lineup. Its commercial success is a fact and the editors of this publication have seen samples of extremely high quality facial and napkin tissues made from blends of this new pulp. Also examined were some fine samples of letterhead papers composed of 100% sugar cane pulp.

It is possible that with the commercial fruition of this process developed by Dr.-Ing. Dante Sandro Cusi (see article in this issue) a new era of sugar cane pulp dawns for the fiber-poor, bagasse-plenty nations.

There are even political overtures attendant on the development of the Cusi process. In many newsprint-poor countries, newsprint imports are rationed by the government. In some instances, there may be strong inclinations to withhold newsprint to newspapers whose editorial policies are critical of the government.

There are some who believe that if a good newsprint pulp can be made domestically from sugar cane, that newspapers will be removed from operating under the shadow of this political weapon and that free newspapers will be an actuality.

For the readers of this publication, Editor Albert W. Wilson has visited the San Cristobal mill of Scott Paper Co., talked with Dr. Cusi and with top Scott officials. T. B. McCabe, president of Scott, told this publication that Scott is very pleased with the Cusi process.

The significance of the new process can be grasped by insiders of the pulp and paper industry who are familiar with Scott Paper Co. quality requirements.

Other newly developed processes in handling bagasse in various stages for pulp or other products are likewise being perfected. For instance, a Swiss company is briquetting bagasse for cheaper shipment to pulp mills or for other purposes. From time to time, PULP & PAPER will report on the progress of these other processes also.

Who's Minding the Store

The rash of industry meetings all seem to come at once this time of year. Add to these an already busy and constant round of mill visits and you can see why, although PULP & PAPER editors are no strangers to the pulp and paper scene, sometimes they are strangers at home.

For instance, Editor Al Wilson is in the middle of a three-month visit to some 12 European countries, talking to industry leaders and visiting mills. A report from him on the "Current Situation in Europe" is a feature of this issue.

Meanwhile, Southern Editor Bill Diehl has been in Cuba preparing a major story, in the course of which he spent some harrowing moments when an overanxious guard aimed a tommy gun at his stomach. Home safely, after two days Writer Diehl took off again to do a feature on Champion's No. 20. In the last 25 days, he's managed to be home for 4!

And in the past month, Eastern Editor Maury Castagne has been in Maine one week, Pennsylvania the next, and the following week accompanying the Italian TAPPI group of some 30 top mill representatives, and then on to his 5th straight TAPPI Coating Conference.

In the Midwest, Editor Don Zeigler was "busy" holding down the headquarters desk in Chicago, but managed to sandwich in a visit to Consolidated's new liquor recovery plant at Wisconsin Rapids.

So who's minding the store? What better way than for our editors to get out into the industry?

Public Recreation: A Sooner Than Expected Impact

The impact of recreation upon privately owned lands was the opening theme of the APA's forest policy forum during Paper Week. This impact may hit the forest products industry a lot sooner than expected.

The battle has just begun on a proposal by the National Park Service to create a national park in Maine. The area is the famed Allagash region and involves an estimated 750,000 acres, about four times the size of Baxter State Park and about 8% of all of Maine's wildlands.

Behind this proposal, which is just one of many made by the Park Service across the nation, is a 10-year program to set aside areas for wilderness or recreational purposes. The current boom in outdoor recreation, is expected to continue to grow as the nation's population soars. In anticipating this growth, the Park Service says it wants to have sufficient facilities on hand to accommodate recreational needs.

If the proposal becomes law, no timber cutting would be permitted, nor would developed campsites or hunting be permitted.

While the Park Service contends that this is one of the last remaining frontiers of the nation's historical wilderness, one woodlands manager for a pulp and paper company says that there is no virgin timber left in that area, that the Allagash region has been cut over two and three times.

Great Northern Paper Co., for instance, as do several and possibly most other forest companies in Maine, permits multiple use of its more than 2 million acres in Maine —and at no cost to the user. Between June 10 and November 29, 1958 Great Northern figured that some 5,593 pleasure cars rolled over just one of its woods roads carrying more than 14,000 passengers.

In contrast, in the same period a watchman stationed on the lower Allagash river in the same area counted only 409 people using the river (actually there were over 600 but 200 were game wardens) and all but six were young campers; the others adults.

Perhaps it is time that the industry speaks as one voice in such matters—that it tell its story. How many of the public know for instance, that the industry grows more than it cuts? How many recognize that the industry forester is a true conservationist, that selective cutting is done for the future health of the forests?

It may be time for the industry to take the initiative and to tell the nation what it is doing. And perhaps it may be time that the industry give some consideration to charging for its recreational facilities.

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